New taxa, nomenclatural changes and notes on Australian grasses in the tribe *Paniceae* (Poaceae: *Panicoideae*)

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Summary

Simon, B.K. (2010). New taxa, nomenclatural changes and notes on Australian grasses in the tribe *Paniceae* (Poaceae: *Panicoideae*). ***Austrobaileya* 8(2): 187–219**. *Arthragrostis brassiana* B.K.Simon, *Digitaria basaltica* B.K.Simon, *Digitaria cowiei* B.K.Simon, *Digitaria dolleryi* B.K.Simon, *Digitaria sharpeana* B.K.Simon, *Digitaria veldkampiana* B.K.Simon, *Entolasia minutifolia* B.K.Simon, *Isachne sharpii* B.K.Simon, *Paspalidium johnsonii* B.K.Simon and *Pseudoraphis jagonis* B.K.Simon are diagnosed as new species. *Pseudoraphis minuta* var. *laevis* B.K.Simon and *Arthragrostis brassiana* var. *minutiflora* B.K.Simon are diagnosed as new varieties. New combinations and changes of status are provided for *Cenchrus brevisetosus* (B.K.Simon) B.K.Simon, *Oplismenus mollis* (Domin) Clifford & Evans ex B.K.Simon, *Setaria pumila* subsp. *subtesselata* (Buse) B.K.Simon, *Urochloa occidentalis* (C.A.Gardner & C.E.Hubb.) B.K.Simon, *Urochloa occidentalis* var. *ciliata* (C.A.Gardner & C.E.Hubb.) B.K.Simon and *Urochloa gilesii* var. *nothochthona* (Domin) B.K.Simon. All *Pennisetum* species have recently been placed in synonymy with *Cenchrus* and the name changes that apply to taxa occurring in Australia are listed. *Cenchrus spinifex* Cav. is the correct name for what has been called *C. incertus* M.A.Curtis. Two more species of *Cyrtococcum*, *C. patens* (L.) A.Camus and *C. accrescens* (Trin.) Stapf are reported as occurring in Australia. Two species of *Digitaria* Hall., *D. diminuta* Hughes and *D. fumida* S.T.Blake, are removed from the synonymy of *D. breviglumis* (Domin) Henrard; the latter species has been recircumscribed to include a species previously known under the phrase name *Digitaria* sp. (Mt Mulligan J.R.Clarkson 5821). Keys and descriptions are given to the species *D. breviglumis*, *D. diminuta*, *D. fumida* and *D. orbata* Hughes. *Isachne minutula* (Gaudich.) Kunth is the correct name of a species previously referred to in Australia as *I. pulchella* auct. non Roth. The genus *Plagiosetum* Benth. is resurrected from synonymy with *Paractaenum* P.Beauv. *Brachiaria occidentalis var. ciliaris* C.A.Gardner & C.E.Hubb., *Oplismenus undulatifolius* var. *molle* Domin and *Pseudoraphis minuta* (Mez) Pilger are lectotypified.

Key Words: Poaceae, Paniceae, *Arthragrostis*, *Arthragrostis brassiana*, *Arthragrostis brassiana* var. *minutiflora*, *Cenchrus*, *Cenchrus brevisetosus*, *Cenchrus spinifex*, *Cyrtococcum*, *Cyrtococcum accrescens*, *Cyrtococcum patens*, *Digitaria*, *Digitaria basaltica*, *Digitaria breviglumis*, *Digitaria cowiei*, *Digitaria diminuta*, *Digitaria dolleryi*, *Digitaria fumida*, *Digitaria orbata*, *Digitaria sharpeana*, *Digitaria veldkampiana*, *Entolasia*, *Entolasia minutifolia*, *Isachne*, *Isachne minutula*, *Isachne sharpii*, *Oplismenus*, *Oplismenus mollis*, *Paspalidium*, *Paspalidium johnsonii*, *Plagiosetum*, *Pseudoraphis*, *Pseudoraphis jagonis*, *Pseudoraphis minuta*, *Urochloa*, *Urochloa occidentalis*, *Urochloa occidentalis* var. *ciliaris*, *Urochloa gilesii*, *Urochloa gilesii* var. *nothochthona*, Australia flora, Northern Territory flora, Queensland flora, Western Australia flora, taxonomy, nomenclature, new species, new variety, identification keys

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Introduction

The grass tribe *Paniceae* R.Br. in Australia has been studied by several authors for the past 25 years, in preparation for an account for the *Flora of Australia* (*FOA*). The first publication of the tribe from this project was prepared in a relatively short period of time from a DELTA database (Dallwitz 1980; Webster 1987). This work was enhanced to some degree for the *FOA* by Caroline Weiller (R.S.B.S, Australian National University) but the editors were of the opinion at the time that this treatment required further enhancement before publication. I have been revising the accounts submitted by Webster and Weiller in the intervening time by a constant modification of their DELTA character sets; this has resulted in the necessity to describe a number of new taxa, make some new combinations and re-examine the circumscription of some taxa.

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Materials and methods

The data and descriptions presented in this paper are based mainly on specimens from BRI, although many of these are duplicated in other Australian and overseas herbaria as indicated in the text. In cases where specimens are based on loaned material from other herbaria this is indicated and where these are types there is a photo in BRI. The data for the distribution maps has been extracted from the Queensland Herbarium database HERBRECS and only represents BRI material.

Common abbreviations in the specimen citations are N.P. (National Park) and S.F. (State Forest).

Taxonomy

1. New taxa of *Arthragrostis* Lazarides

The genus *Arthragrostis* Lazarides, characterised by spikelets with disarticulations at the base of the spikelets, secondary branches and primary branches, was originally described on the basis of one species (Lazarides 1985). Since then two more species were described (Simon 1986, 1992) and the presence of a fourth species, with two varieties, became apparent when herbarium specimens identified as *A. deschampsioides* (Domin) Lazarides were examined in greater detail.

Arthragrostis brassiana B.K.Simon, **species nova** *A. deschampsioidi* (Domin) Lazarides similis sed glumis circa aequilongis differt. **Typus:** Queensland. Cook District: Crest of Western Scarp of Great Dividing Range, 12 miles [19 km] E of The Lynd, 11 July 1954, *S.T.Blake 19478* (holo: BRI; iso: AD, CANB, DNA, K, L, MO, PERTH, PRE).

Flowering culms 30–70 cm tall, 3–5-noded. Ligule 0.5–0.7 mm long. Leaf blades flat, 3–9 cm long, 2–4 mm wide. Inflorescence 8–35 cm long. Primary branches 3–10 cm long. Pedicels distinctly angled. Spikelets 5–10 on a typical lowermost primary branch, lanceolate to ovate, 2–5.2 mm long, 0.6–1.5 mm wide. Glumes ± equal in length, glabrous; lower glume ovate to lanceolate, 3–5-nerved; upper glume lanceolate, 5–7-nerved, acute, muticous. Lower floret sterile; lemma with apex acute; palea vestigial. Upper floret: lemma yellow or brown, apically rounded, muticous; palea cartilaginous.

***Notes*:** This species differs from *A. deschampsioides* by the glumes being more or less equal in length as opposed to being distinctly unequal. The known distributions of both species are presented in **Map 1**.

Two varieties are here recognised and distinguished by spikelet size, 3.8–5.2 mm long in var. *brassiana* and 2–3.5 mm long in var. *minutiflora.* The varieties appear to be at least partially sympatric based on the available collection records.

***Etymology*:** Named for Leonard J. Brass (1900–1971), Australian botanist who collected widely in north Queensland, New Guinea and tropical Africa and who collected most of the material of the species and the type specimen of the new variety.

Arthragrostis brassiana var. **brassiana**

Inflorescence 16–30 cm long. Spikelets 3.8–5.2 mm long, 1–1.5 mm wide. Lower glume 3–3.2 mm long, lanceolate, 5-nerved. Upper glume 3.4–3.7 mm long, lanceolate, 7-nerved. Lower floret; lemma 3.8–5.2 mm long, chartaceous; palea vestigial (*c.* 0.5 mm long), with a rounded apex. Upper floret: lemma 1.5–2 mm long, decidedly firmer than glumes, coriaceous, smooth, oblong.

***Additional specimens examined*: Queensland**. Cook District: Newcastle Bay, 2.5 miles [4 km] S of Somerset, May 1948, *Brass 18712* (A, BRI); Lockerbie, 10 miles [16 km] W of Somerset, Apr 1948, *Brass 18495* (A, BRI); Jardine River, May 1948, *Brass 18875* (A, BRI); Shipton's Flat, Sep 1948, *Brass 20166* (A, BRI). Burke District: Esmeralda Station, Richmond – Croydon Road, Mar 2003, *Kahler TH7828 & Appelman* (BRI).

***Distribution and habitat*:** Northern Queensland, mainly on Cape York peninsula with one record from the Burke District (**Map 1**). It occurs in coastal sand dunes and open woodland.

***Phenology*:** Flowering May, July, September.

Arthragrostis brassiana var. **minutiflora** B.K.Simon, **varietas nova** *A. brassiana* var. *brassiana* sed spiculis minoribus differt. **Typus:** Queensland. Cook District:

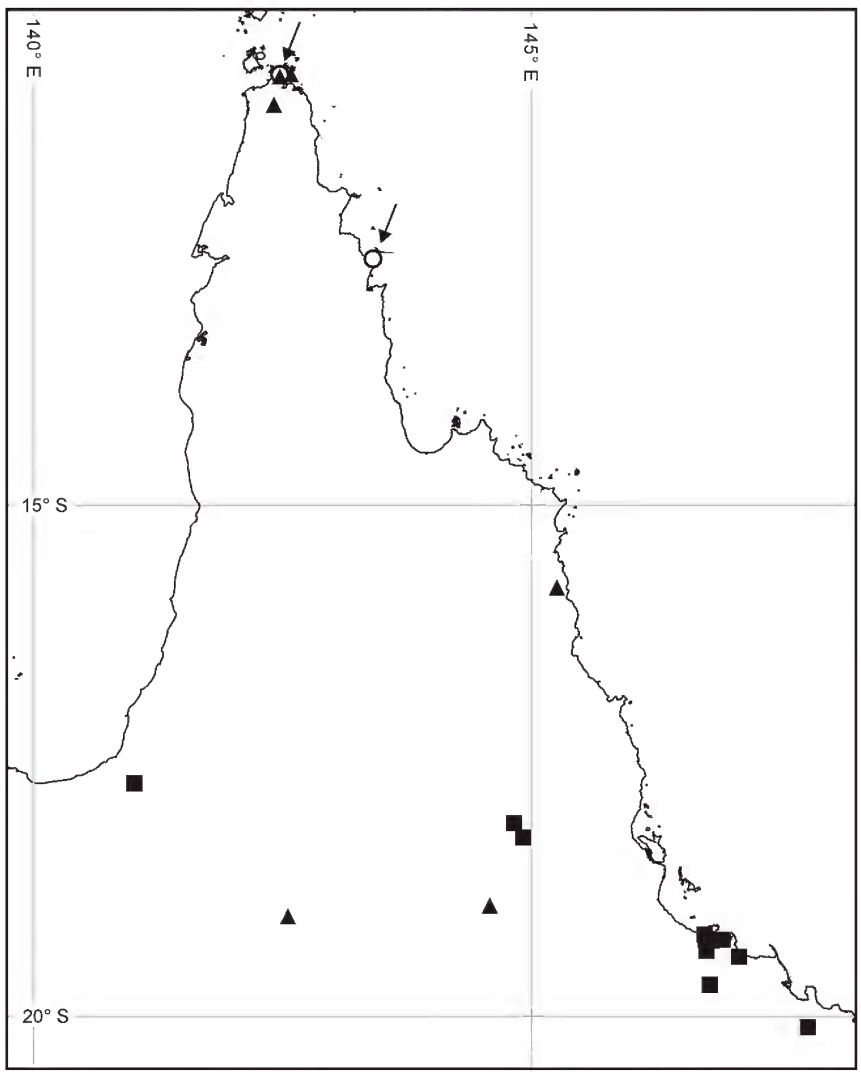
Lockerbie, 10 miles [16 km] W of Somerset, 4 May 1948, *L.J.Brass 18637* (holo: BRI; iso: A).

Inflorescence 20–35 cm long. Spikelets 2–3 mm long, 0.6–0.8 mm wide. Lower glume 2.1–2.4 mm long, lanceolate, 3-nerved. Upper glume *c.* 2 mm long, lanceolate, 5-nerved. Lower floret; lemma *c.* 2 mm long. Palea vestigial (*c.* 0.3 mm long). Upper floret: lemma 1.3–1.4 mm long, decidedly firmer than glumes, coriaceous, smooth, oblong.

***Additional specimens examined*: Queensland.** Cook District: Portland Roads, Jun 1942, *Brass 19007* (A, BRI); Lockerbie, 10 miles [16 km] W of Somerset, Apr 1948, *Brass 18430* (A, BRI).

***Distribution and habitat*:** This variety is restricted to northern Cape York peninsula in open forest and rainforest margins (**Map 1**).

***Phenology*:** Flowering April to June.



Map 1. Distribution in northern Queensland of *Arthragrostis deschampsioides* ■, *A. brassiana* var. *brassiana* ▲ and *A. brassiana* var. *minutiflora* ○

Key to species and varieties of *Arthragrostis* in Australia

1 Upper glume and lower lemma drawn out to an arista 2 mm or more long . . . . . **A. aristispicula**
1. Upper glume and lower lemma acute, acuminate or with an apical cusp to 0.3 mm long 2

2 Glumes with tubercle-based cilia . . . . . **A. clarksoniana**
2. Glumes glabrous 3

3 Glumes distinctly unequal . . . . . **A. deschampsioides**
3. Glumes ± equal 4

4 Spikelets 3.8–5.2 mm long . . . . . **A. brassiana** var. **brassiana**
4. Spikelets 2–3.5 mm long . . . . . **A. brassiana** var. **minutiflora**

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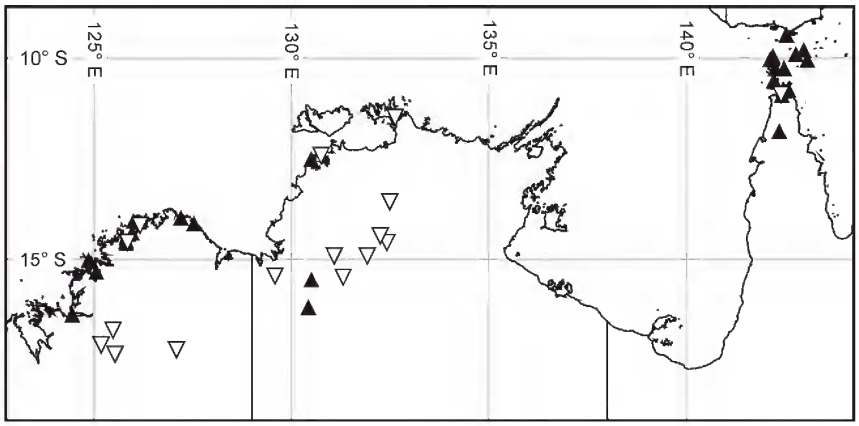
2. *Cenchrus* L. in Australia

The phylogeny of the bristle clade of the panicoid grasses has been researched for about ten years by a number of authors, leading to the amalgamation of the genera *Cenchrus* L. and *Pennisetum* Rich. (Chemisquy *et al.* 2010). This is relevant for all Australian taxa formerly placed in *Pennisetum*, although some other species had prior names under *Cenchrus*. This included the buffel grasses that had only recently been transferred to *Pennisetum* based solely on morphological spikelet characters (Wipff 2001).

The name changes of Chemisquy *et al.* (2010) that apply to Australia, along with others not mentioned by them, are summarised in **Table 1**. Details of basionyms and types for these name changes can be obtained from their paper.



Map 2. Distribution in northern Australia of *Cenchrus elymoides* ▽ and *C. brevisetosus* ▲

Table 1. Name transfers for *Cenchrus* taxa occurring in Australia

Previous Name	Currently Accepted Name
Pennisetum advena Wipff & Veldkamp, *Sida* 18(4): 1033, f. 1 (1999).	*Cenchrus advena* (Wipff & Veldkamp) Morrone, *Ann. Bot.* 106: 127 (2010).
Pennisetum alopecuroides (L.) Spreng., *Syst. Veg.* 1: 303 (1824).	*Cenchrus purpurascens* Thunb., *Trans. Linn. Soc. London* 2: 329 (1794).
Pennisetum basedowii Summerh. & C.E.Hubb., *Bull. Misc. Inform. Kew* 1926: 440 (1926).	*Cenchrus basedowii* (Summerh. & C.E.Hubb.) Morrone, *Ann. Bot.* 106: 127 (2010).
Pennisetum ciliare (L.) Link, *Hort. Berol.* 1: 213 (1827).	*Cenchrus ciliaris* L., *Mant. Pl.* 302 (1771).
Pennisetum clandestinum Hochst. ex Chiov., *Annuario Reale Ist. Bot. Roma* 8: 41 (1903).	*Cenchrus clandestinus* (Hochst. ex Chiov.) Morrone, *Ann. Bot.* 106: 127 (2010).
Pennisetum elymoides (F.Muell.) C.A.Gardner, *Fl. W. Australia* 277 (1952).	*Cenchrus elymoides* F.Muell., *Fragm.* 8: 107 (1873).
Pennisetum glaucum (L.) R.Br., *Prodr.* 195 (1810).	*Cenchrus americanus* (L.) Morrone, *Ann. Bot.* 106: 127 (2010).
Pennisetum macrourum Trin., *Gram. Panic.* 64 (1826).	*Cenchrus macrourus* (Trin.) Morrone, *Ann. Bot.* 106: 128 (2010).
Pennisetum pedicellatum Trin., *Mém. Acad. Imp. Sci. St. Pétersbourg Hist. VI, Sci. Math.* 3: 184 (1834).	*Cenchrus pedicellatus* (Trin.) Morrone, *Ann. Bot.* 106: 128 (2010).
Pennisetum pedicellatum subsp. *unispiculum* Brunken, *J. Linn. Soc., Bot.* 79: 62 (1979).	*Cenchrus pedicellatus* subsp. *unispiculus* (Brunken) Morrone, *Ann. Bot.* 106: 128 (2010).
Pennisetum pennisetiforme (Hochst. ex Steud.) Wipff, *Sida* 19: 527 (2001).	*Cenchrus pennisetiformis* Hochst. ex Steud., *Syn. Pl. Glumac.* 1: 109 (1854).
Pennisetum polystachion (L.) Schultes, *Mant.* 2: 146 (1824).	*Cenchrus polystachios* (L.) Morrone, *Ann. Bot.* 106: 129 (2010).
Pennisetum purpureum Schumach., *Beskr. Guin. Pl.* 44 (1827).	*Cenchrus purpureus* (Schumach.) Morrone, *Ann. Bot.* 106: 129 (2010).
Pennisetum setaceum (Forssk.) Chiov., *Bull. Soc. Bot. Ital.* 1923: 113 (1923).	*Cenchrus setaceus* (Forssk.) Morrone, *Ann. Bot.* 106: 129 (2010).
Pennisetum setigerum (Vahl) Wipff, *Sida* 19 (3): 527-527 (2001).	*Cenchrus setigerus* Vahl, *Enum. Pl.* 2: 395 (1805).
Pennisetum thunbergii Kunth, *Révis. Gramin.* 1: 50 (1829).	*Cenchrus thunbergii* (Kunth) Morrone, *Ann. Bot.* 106: 129 (2010).
Pennisetum villosum R.Br. ex Fresen., *Mus. Senckenberg.* 2: 134 (1837).	*Cenchrus longisetus* M.C.Johnst., *Sida* 1(3): 182 (1963).

One Australian taxon not included in the above table is *Cenchrus elymoides* var. *brevisetosus* B.K.Simon. This taxon is elevated to species rank as there appears to be a correlation to some degree, when looking at the two infra-specific taxa of *Cenchrus elymoides,* between geographical distribution and the morphological characters of the spikelets.

Cenchrus brevisetosus (B.K.Simon) B.K.Simon **stat. nov.**; *Cenchrus elymoides* var. *brevisetosus* B.K.Simon, *Austrobaileya* 2: 21 (1984). **Type:** Queensland. Cook District: Cape York, *s.dat.*, *E.Daemel s.n.* (holo: MEL [photo BRI]).

***Notes*:** *Cenchrus brevisetosus* differs from *C. elymoides* in that the outer involucral bristles are very short, with one involucral bristle extended apically beyond the burr. In *C. elymoides* the involucral bristles are as long as, or extend beyond the spikelets, with one involucral spine at least three times longer than others. *C. brevisetosus* and *C. elymoides* differ to some degree in their geographical distribution. BRI material shows that in Queensland the former species is only represented in the Torres Strait, whereas there are only two Queensland records in BRI of *C. elymoides* – both from Castle Hill, Townsville. This locality is so remote from the others in the Northern Territory and Western Australia that it is difficult to rationalise, but the odd distribution may be due to under collecting in the intervening zone. Both species are present in the Northern Territory and Western Australia with a tendency for *C. brevisetus* to be closer to the coast and *C. elymoides* more inland, but there are exceptions (**Map 2**).

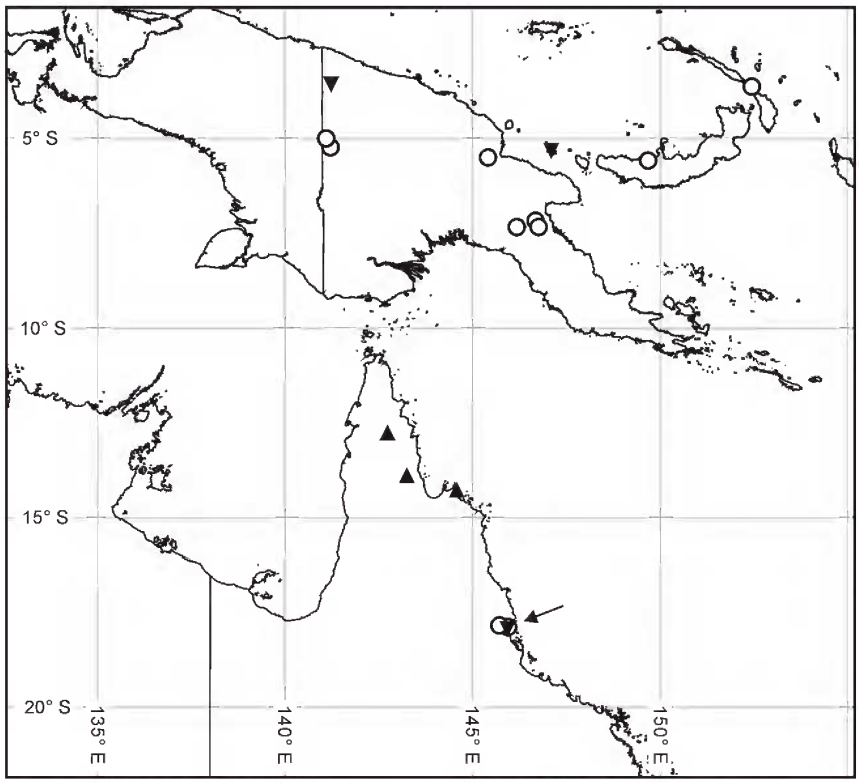
Cenchrus spinifex Cav.

Cenchrus spinifex Cav. [*Icon.* 5: 38, t. 461 (1799)] is the correct name for what has been called *C. incertus* M.A.Curtis [*Boston J. Nat. Hist.* 1: 135 (1837)]. There has been a hesitancy to use the name of Cavanilles before now because of the uncertainty of the type material. When DeLilse (1963) undertook his revision of the genus he only saw a reputed isotype of *C. spinifex* from the Chicago Natural History Museum, but was not certain of the correctness of the isotype label at that time. The holotype specimen is now available for examination at the MA website; a careful scrutiny reveals it to be the type collected by Née and that it is an earlier nomenclatural synonym of *C. incertus.* This synonymy has already been used in recent literature (Stieber & Wipff 2003).

3. *Cyrtococcum* Stapf in Australia

Until 1992 the only species of *Cyrtococcum* reported as occurring in Australia was *C. oxyphyllum* (Steudel) Stapf, but in that year an endemic species, *C. capitis-york* B.K.Simon (**Map 3**), was described from north Queensland (Simon 1992). This species has been regarded by some authors (Veldkamp, *Flora Malesiana* ms) as synonymous with *C. patens* (L.) A.Camus. If this name is used for the Cape York Peninsula material then the name should also apply to the Indian species *C. deccanense* Bor, with which *C. capitis-york* was compared when originally described. The tubercle-based hairs, smaller and tighter inflorescence and narrower leaf blades are all morphological characters that separate *C. capitis-york* from *C. patens*; the latter species is quite widespread in New Guinea (**Map 3**). To complicate matters an authentic Australian specimen of *C. patens* has been collected from near Tully (*Jago 5159 & Wannan* (BRI)) in 1999 (**Map 3**). Although not having as large an inflorescence as Asian material of this species, the specimen appears closer to *C. patens* than it does to *C. capitis-york*.

A fourth Australian species of *Cyrtococcum* collected in the last eight years is *C. accrescens* (Trin.) Stapf. It differs from *C. patens* by having smaller spikelets (1.35–1.5 mm compared to 1.5–1.8 mm) and a large more effuse panicle (20–50 × 6–30 cm compared to 3–18 × 0.8–3 cm). The two specimens in BRI both come from rainforest habitats of the Tully Region, north Queensland (*Gray 8117* from Bulbin Creek, 29 Apr 2002 (BRI, CNS) and *Ford AF5378 & Jones* from Tully River Island, 3 Sep 2008 (BRI, NSW)). Outside Australia its geographic range extends in Asia as far as southern China and to tropical regions in the Pacific (**Map 3**).



Map 3. Distribution in Australia and New Guinea of *Cyrtococcum capitis-york* ▲, *C. accrescens* ▼ and *C. patens* ○

Key to species of *Cyrtococcum* in Australia

1 Spikelets usually 1.35–1.5 mm long. Panicle usually effuse and open, 20–50 × 6–30 cm . . . . . **C. accrescens**
1. Spikelets longer than 1.5 mm long. Panicle open to contracted, 3–18 × 0.8–3 cm 2

2 Spikelets with tubercle-based hairs . . . . . **C. capitis-york**
2. Spikelets glabrous 3

3 Inflorescence contracted; upper glume as long as the spikelet, 3-nerved . . . . . **C. oxyphyllum**
3. Inflorescence open; upper glume shorter than the spikelet, 5-nerved . . . . . **C. patens**

4. New species and reinstatements of species in *Digitaria* Hall.

Further study of this genus subsequent to Webster (1983) has revealed five new species based upon examination of herbarium material.

Digitaria basaltica B.K.Simon, **species nova** *D. benthamianae* Henrard similis sed spiculis hirsutioribus, gluma inferiore longiore et lemmate inferiore 7-nervi differt. **Typus:** Queensland: North Kennedy District: Great Basalt Wall, 5 April 1995, *R.J.Fensham 2183* (holo: BRI; iso: CANB, K).

Digitaria sp. (Great Basalt Wall R.J.Fensham 2183) (*ined.*)

Perennial, rhizomatous. Flowering culms caespitose, 70–90 cm tall, 3–5-noded. Leaves: sheaths hairy; ligule 1.9–2.3 mm long; blades flat, 9–30 cm long, 3–5 mm wide, velvety hairy, scabrous. Inflorescence 15–40 cm long, on a distinct central axis. Racemes 14–17, usually devoid of spikelets at base, long and rigid, 17–37 cm long; central axis 10–14 cm long. Pedicels 1–4 mm long, apices cupuliform. Spikelets 24–36 on a typical lowermost primary branch, discernibly hairy, paired, lanceolate, 2.2–2.4 mm long, 0.9–1.2 mm wide; lower glume 0.8–0.9 mm long, oblong and truncate, nerveless, membranous, smooth, glabrous; upper glume 2.1–2.3 mm long, slightly shorter than spikelet, elliptic, 7-nerved, with ciliate margins and sub-margins, hairy, evenly villous, acute. Lower floret: lemma 2.2–2.4 mm long, hairy, 7-nerved; palea absent. Upper floret shorter than the lower floret; lemma 1.9–2 mm long, brown, cartilaginous, muricate, elliptic, acuminate, muticous; palea as long as and enclosed by lemma. **Fig. 1.**

***Distribution and habitat*:** This species is recorded from ephemeral wetlands on basalt from the Great Basalt Wall, Queensland (**Map 4**), where it was reported as locally dominant.

***Phenology*:** Flowering April.

***Notes*:** This species is a member of *Digitaria* section *Pennatae* (Stapf) Henrard (Webster 1983), together with *D. ammophila* (Benth.) D.K.Hughes, *D. papposa* (R.Br.) Beauv., *D. hystrichoides* Vickery, *D. benthamiana* Henrard, *D. nematostachya* (F.M.Bailey) Henrard, *D. porrecta* S.T.Blake, *D. divaricatissima* (R.Br.) D.K.Hughes and *D. coenicola* (Muell.) D.K.Hughes. It is so far known only from the type locality. It differs from *D. benthamiana* by the spikelets being discernibly hairy, the lower glumes being longer and by the lower lemma being 7-nerved, as opposed to 5-nerved in *D. benthamiana*.

***Etymology*:** Named for the geology of the habitat in which it grows.

Digitaria cowiei B.K.Simon, **species nova** *D. velutinae* (Forssk.) P.Beauv. similis sed glumis superioribus 5-nervis versus 3-nervis differt. **Typus:** Northern Territory. Darwin & Gulf: Amungee Mungee Station, 2 May 1991, *I.D.Cowie 1752 & B.A.Wilson* (holo: BRI; iso: DNA).

Digitaria sp. (Amungee Mungee Stn I.D.Cowie+ 1752) (*ined.*)

Annual. Flowering culms caespitose, 30–45 cm tall, 1 or 2-noded. Leaves: sheaths hairy; ligule 0.8–1.2 mm long; blades flat, 2–8 cm long, 1–3 mm wide, hairy, scabrous. Inflorescence 7–12 cm long, on a distinct central axis. Racemes 4–6, usually bearing spikelets to base, not long and rigid, 2.5–4.5 cm long. Pedicels 0.2–1.2 mm long, apices cupuliform. Spikelets 20–24 on a typical lowermost primary branch, hairy, paired, elliptic, 1.6–1.7 mm long, 0.7–0.8 mm wide. Lower glume 0.1–0.2 mm long. Upper glume 1.3–1.4 mm long, noticeably shorter than spikelet, oblong, 5-nerved, hairy, setose, rounded. Lower floret: lemma 1.6–1.7 mm long, hairy, with indumentum shorter than the spikelet, 7-nerved; palea absent. Upper floret subequal to the lower floret; lemma *c.* 1.6 mm long, brown, cartilaginous, muricate, lanceolate, acuminate, muticous; palea as long as and enclosed by lemma. **Fig. 1.**

***Additional specimen examined*: Northern Territory**. Darwin & Gulf: Escarpment behind Redbank Mine accommodation, May 1984, *Halford 845122* (BRI, DNA).

***Distribution and habitat*:** Only known from the Top End of the Northern Territory (**Map 4**) in *Acacia shirleyi – Macropteranthes kekwickii* thicket on shallow sandy soils.

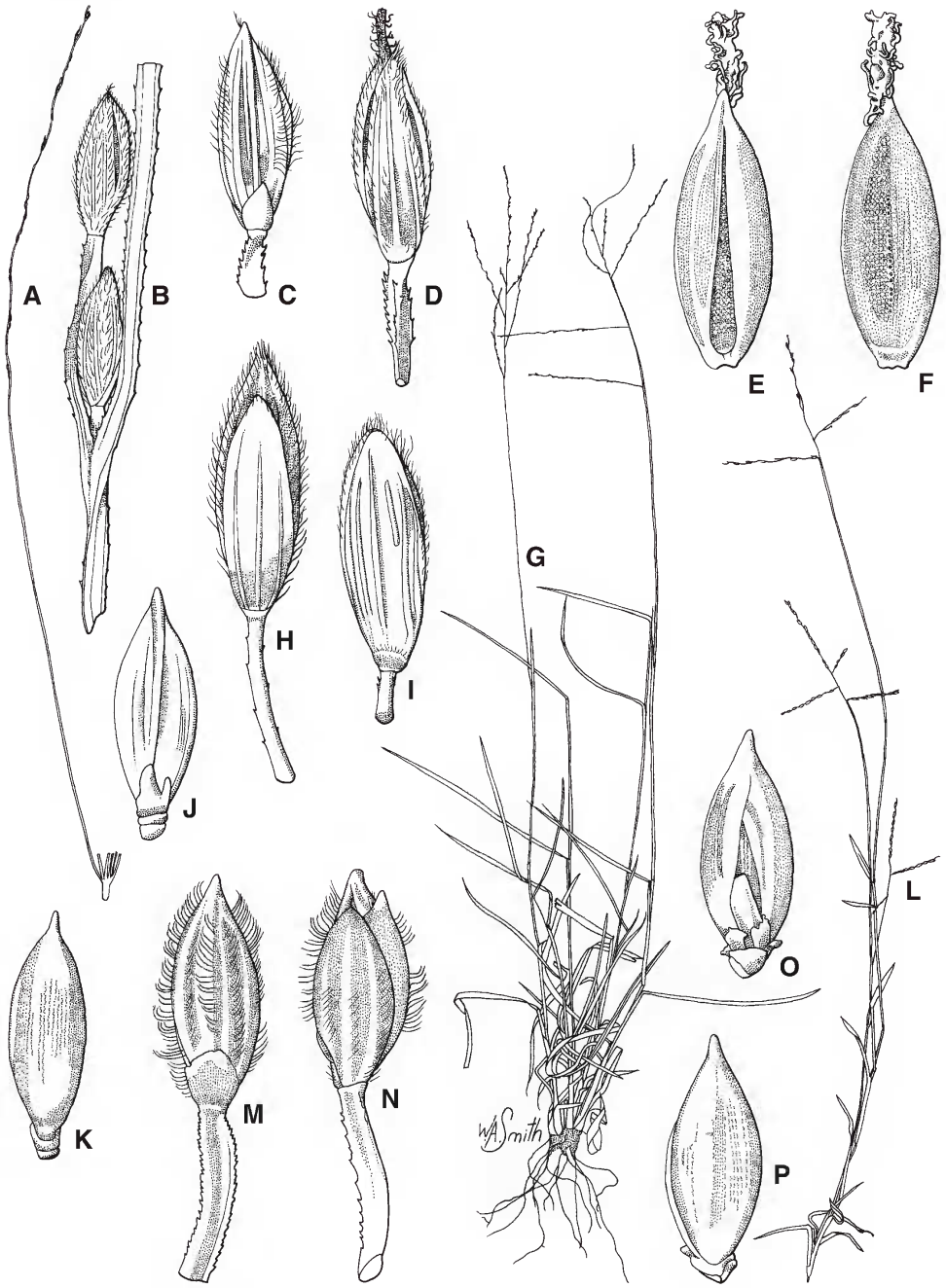


Fig. 1. ***Digitaria basaltica***. A. portion of inflorescence showing branching of racemes and one complete raceme × 0.4. B. spikelet pair × 0.8. C. spikelet, lower glume facing ×12. D. spikelet, upper glume facing × 12. E. upper floret, front view × 18. F. upper floret, back view × 18. ***D. cowiei***. G. habit × 0.4. H. spikelet, upper glume facing × 24. I. spikelet, lower glume facing × 24. J. upper floret, front view × 24. K. upper floret, back view × 24. ***D. dolleryi***. L. habit × 0.4. M. spikelet, lower glume facing × 16. N. spikelet, upper glume facing × 16. O. upper floret, front view × 18. P. upper floret, back view × 18. A–F from *Fensham 2183* (BRI), G–K from *Cowie 1752 & Wilson* (BRI); L–P from *Dollery 354* (BRI). Del. W.Smith.

***Phenology*:** Flowering May.

***Notes*:** This is a distinctive annual grass with very small hairy spikelets. It differs from *Digitaria velutina* (Forssk.) P.Beauv. by having fewer spikelets on the lowermost primary inflorescence branch and by the upper glume being 5-nerved as opposed to 3-nerved. It is a member of *Digitaria* section *Digitaria* (Webster 1983).

***Etymology*:** Named for Ian Cowie, botanist at the Northern Territory Herbarium, Darwin. He has worked in the Top End of the Northern Territory for the past 21 years and has a wide experience in flora survey and in the taxonomy and ecology of plants from that region.

Digitaria dolleryi B.K.Simon, **species nova** *D. imbricatae* R.D.Webster similis sed spiculis minoribus differt (2–2.3 mm vs. 2.5–3.5 mm). **Typus:** Queensland. Warrego District: Chesterton National Park, 18 April 2002, *C.Dollery 354* (holo: BRI).

Digitaria sp. (Chesterton NP C.Dollery 354) (*ined.*)

Annual. Flowering culms decumbent to caespitose, 20–40 cm tall, 3–5-noded. Leaves: sheaths glabrous; ligule 0.5–0.8 mm long; blades flat, 1–2.5 cm long, 1–2 mm wide, glabrous. Inflorescence 3–6 cm long, on a distinct central axis. Racemes 2–5, usually bearing spikelets to base, 2–5 cm long. Pedicels 1–5 mm long, apices cupuliform. Spikelets 22–26 on a typical lowermost primary branch, hairy, paired, elliptic, 2–2.3 mm long, 0.9–1.1 mm wide. Lower glume 0.7 mm long, truncate, nerveless, hyaline, smooth, glabrous, truncate. Upper glume 1.9–2 mm long, as long as spikelet, oblong, 3-nerved, villous with pinkish hairs, acute. Lower floret: lemma 1.8–2.1 mm long, villous with pinkish hairs, 7-nerved; palea absent. Upper floret subequal to the lower floret; lemma 1.8–2.1 mm long, acute to acuminate, muticous; palea as long as and enclosed by lemma. **Fig. 1.**

***Distribution and habitat*:** Only known from a single record from central Chesterton National Park, Queensland (**Map 4**) where it was reported as occurring in *Callitris* woodland with a grassy ground stratum.

***Phenology*:** Flowering April.

***Notes*:** This species is a member of *Digitaria* section *Digitaria* (Webster 1983). It is similar to *D. imbricata* R.D.Webster by having a short web of brown hairs, but differs by the smaller spikelets.

***Etymology*:** Named for the collector of the type, Colin Dollery, Queensland Parks and Wildlife Service, Queensland Dept. of Environment and Natural Resources, Cairns.

Digitaria sharpeana B.K.Simon, **species nova** *D. leucostachyae* (Domin) Henrard et *D. gibbosae* (R.Br.) P.Beauv. similis sed spiculis minoribus hirsutis et *D. orariae* R.D.Webster similis sed spiculis binatim differt. **Typus:** Queensland. Moreton District: Sunnybank, Brisbane, 24 March 1934, *S.T.Blake 5300* (holo: BRI; iso: NSW, CANB).

Digitaria sp. (Sunnybank S.T.Blake 5300) (*ined.*)

Perennial, very shortly rhizomatous. Flowering culms caespitose, 40–90 cm tall, 4–6-noded. Leaf sheaths hairy on margins towards the apex. Ligule 0.1–0.15 mm long. Leaf blades flat, 5–30 cm long, 2–3 mm wide, glabrous, smooth. Inflorescence 9–20 cm long, consisting of a single raceme or digitate or subdigitate (rarely). Racemes 1 or 2 (rarely), 9–20 cm long. Pedicels 1–4 mm long, apices discoid. Spikelets homomorphous, 50–120 on a typical lowermost primary branch, glabrous, in 3's, elliptic, 2–2.5 mm long, 0.75–1 mm wide. Lower glume absent. Upper glume 1.7–2 mm long, slightly shorter than spikelet to noticeably shorter than spikelet, elliptic, 3-nerved, glabrous, acute. Lower floret: lemma 2.5–3 mm long, glabrous, 7-nerved; palea absent. Upper floret subequal to the lower floret; lemma 2.5–3 mm long, brown to black, chartaceous, uniformly striate, elliptic, acute, muticous; palea as long as lemma. Caryopsis *c.* 2.5 mm long. **Fig. 2.**

***Additional specimens examined*: Queensland**. Port Curtis District: 21.5 km SE of Miriam Vale, Aug 1996, *Thompson MIR345 & Price* (BRI); 17 km N of Miriam Vale, Jul 1996, *Thompson MIR344 & Turpin* (BRI). Wide Bay District: just below summit of Mt Benarige, S.F. 57, Mar 1996, *Grimshaw PG2332 & Turpin* (BRI, CANB, K, NSW).

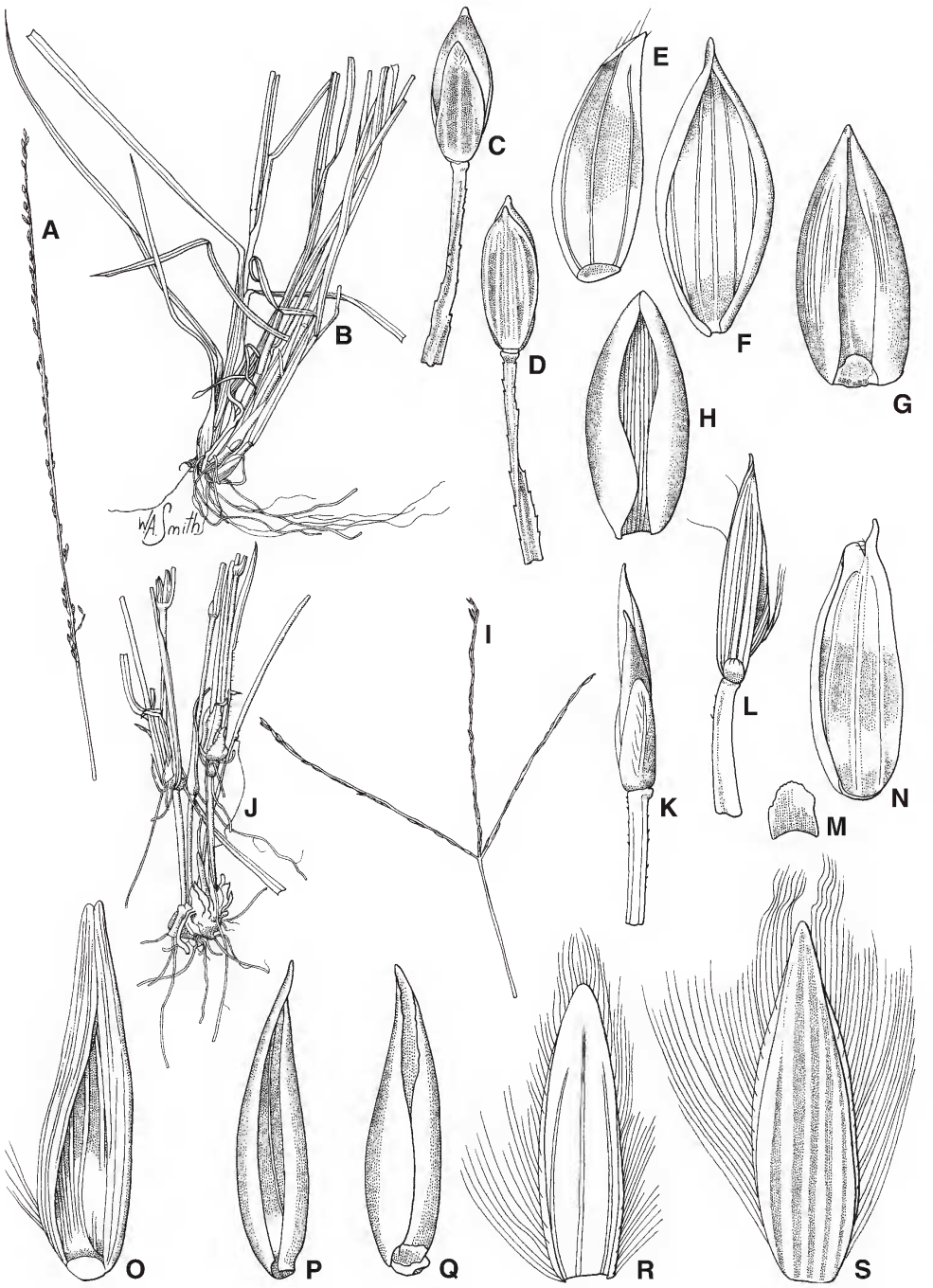


Fig. 2. ***Digitaria sharpeana***. A. inflorescence × 0.6. B. base of plant × 0.6. C. spikelet, upper glume facing x 10. D. spikelet, lower lemma facing × 10. E. upper glume × 20. F. lower lemma × 20. G. upper lemma × 20. H. upper palea × 20. (D–H, all front view). ***D. veldkampiana***. I. inflorescence × 0.6. J. base of plant × 0.6. K. spikelet, upper glume facing × 8. L. spikelet, lower glume facing × 8. M–Q. sessile spikelet, all front view and × 16. M. lower glume. N. upper glume. O. lower lemma. P. upper lemma. Q. upper plaea. R–S. pedicelled spikelet, all × 16. R. upper glume, front view. S. lower lemma, back view. A–H from *Blake 5300* (BRI); I–S from *Blake 21286* (BRI). Del. W.Smith.

***Distribution and habitat*:** South-east Queensland (Port Curtis, Wide Bay and Moreton Pastoral Districts) (**Map 4**). It occurs in open forest of *Eucalyptus* spp. and *Corymbia* spp. on sandstone and sandy loams.

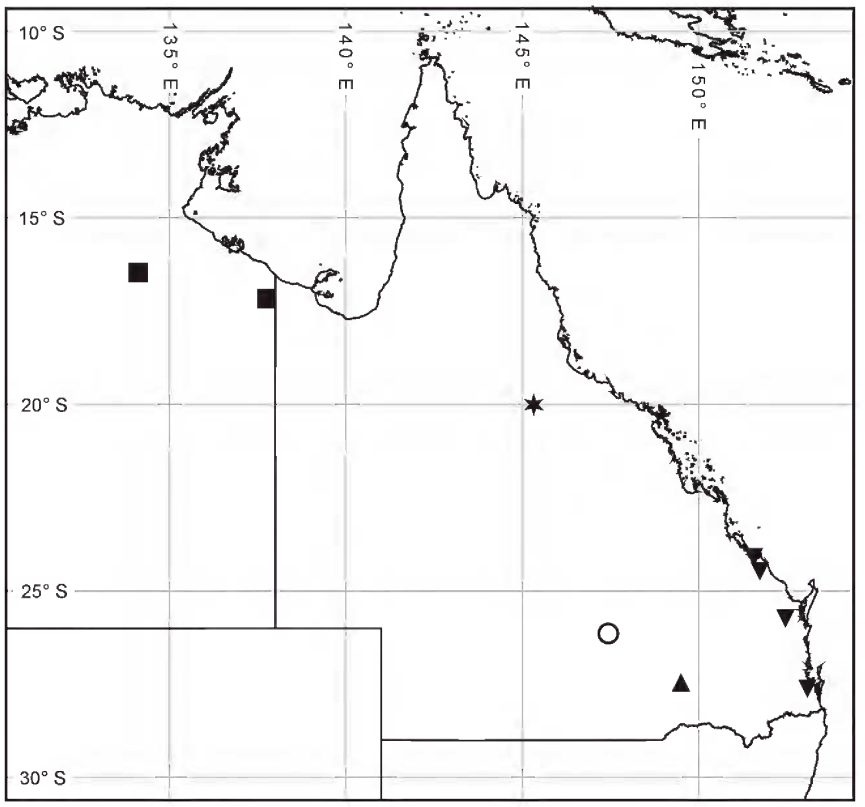
***Phenology*:** Flowering July to August and March.

***Notes*:** This species is a member of *Digitaria* section *Monodactylae* Henrard (Webster 1983), together with *D. leucostachya* (Domin) Henrard, *D. gibbosa* (R.Br.) P.Beauv. and *D. oraria* R.D.Webster. It differs from *D. leucostachya* and *D. gibbosa* by the spikelets not being obviously hairy and from *D. oraria* by the spikelets being arranged in pairs. It differs from the superficially similar *D. stenostachya* (Benth.) Hughes and *D. veldkampiana* B.K.Simon by the racemes usually being single (rarely paired). The specimens of *D. sharpeana* were formerly placed with *D. ramularis* (Trin.) Henrard in the Queensland Herbarium, but they are not at all similar to that species.

***Etymology*:** Named for Philip Ridley Sharpe, formerly of the Queensland Herbarium, a keen collector, botanist and translator of German botanical literature.

Digitaria veldkampiana B.K.Simon, **species nova** *D. heteranthae* (Hook.f.) Merr. similis sed spicularum pedicellatarum lemmate inferiore sine setis differt. **Typus:** Queensland. Maranoa District: SE of Surat, Thomby Range, 21 May 1960, *S.T.Blake 21286* (holo: BRI; iso: L, MEL).

Digitaria sp. (Surat S.T.Blake 21286) (*ined.*)



Map 4. Distribution in northern Australia of *Digitaria basaltica* ✶, *Digitaria sharpeana* ▼, *Digitaria veldkampiana* ▲, *Digitaria dolleryi* ○ and *Digitaria cowiei* ■

Perennial, rhizomatous. Flowering culms decumbent, 30–50 cm tall, 4–8-noded. Leaf sheaths hairy at the base. Ligule 1–1.5 mm long. Leaf blades flat, 2–6 cm long, 2–4 mm wide, glabrous, smooth. Inflorescence 6–10 cm long, digitate or subdigitate; racemes 2–4, usually bearing spikelets to the base, 6–10 cm long. Pedicels 0.7–3 mm long, apices truncate. Spikelets heteromorphous, 26–32 on a typical lowermost primary branch, hairy, paired, lanceolate, 3.5–4 mm long, 1–1.2 mm wide. Sessile spikelet: lower glume *c.* 0.2 mm long, truncate, nerveless, membranous, smooth, glabrous, truncate. Upper glume *c.* 2.5 mm long, slightly shorter than spikelet, lanceolate, 5-nerved, glabrous to hairy (much hairier in some pedicelled spikelets), villous, acute. Lower floret: lemma 3.5–4 mm long, glabrous to hairy (much hairier in some pedicelled spikelets), with indumentum equalling the spikelet length, 7-nerved; palea vestigial, or absent. Upper floret subequal to the lower floret; lemma 3.5–4 mm long, brown, chartaceous, finely muricate, lanceolate, acute, muticous; palea as long as and enclosed by lemma. Pedicelled spikelets: lower floret lemma without bristles. **Fig. 2.**

***Distribution and habitat*:** Known from the Thomby Range in southern Queensland (**Map 4**) where it was recorded as occurring in *Eucalyptus* and *Acacia* woodland on very shallow soil overlying lateritised surface rock.

***Phenology*:** Flowering May.

***Notes*:** This species is a member of *Digitaria* section *Digitaria* (Webster 1983), together with *D. ctenantha* (F.Muell.) Hughes, *D. didactyla* Willd., *D. radicosa* (C.Presl) Miq., *D. ciliaris* (Retz.) Koeler, *D. bicornis* (Lam.) Roem. & Schult., *D. setigera* Roth. ex Roem. & Schult., *D. sanguinalis* (L.) Scop and *D. stenostachya*. The only specimen of this species was formerly placed by Webster (1987) in *D. heterantha*; however, an examination of a drawing of the type of this species in Veldkamp (1973) indicates that the pedicelled spikelet usually has bristles, whereas they are absent in the pedicelled spikelet of *D. veldkampiana*.

***Etymology*:** Named for Dr Jan Frits (JeF) Veldkamp, of the Netherlands Centre for Biodiversity Naturalis, Leiden University, a specialist in the grass family of the South-East Asian region.

Apart from the new species of *Digitaria*, there are other name changes that apply to this genus as a result of more critical study of the genus while preparing the *FOA* treatment. In the four published editions of the census of the Queensland Flora (Simon 1994, 1997, 2002; Simon *et al.* 2007) there has been listed a species under the phrase name *Digitaria* sp. (Mt Mulligan J.R.Clarkson 5821) from north Queensland and the Northern Territory. This species has usually incurved and terete leaves and an inflorescence of one to many racemes in which the spikelets have a unique brown to black colour of the upper floret. The leaves can sometimes be very narrow and filiform and the branches fascicled at the nodes. When the species *D. breviglumis* (Domin) Henrard was being written up it was discovered that this name had been misapplied to a group of species that had included *D. diminuta* Hughes and *D. fumida* S.T.Blake and that the type of *D. breviglumis* was in fact a good match for *Digitaria* sp. (Mt Mulligan J.R.Clarkson 5821). The names *D. diminuta* and *D. fumida* have been reinstated for similar, but nevertheless different, species all of which possess an upper glume less than half the spikelet length; these can be distinguished by the following key.

1 Inflorescence with few branches, sometimes only 1 2
1. Inflorescence with many branches, at least 8 3

2 Inflorescence with 1–4 branches; lower lemma 5-nerved; upper glume nerveless; sometimes with many culm branches fascicled at nodes . . . . **D. breviglumis**
2. Inflorescence with at least 4 branches; lower lemma 7-nerved; upper glumes 3-nerved; culm branches never fascicled at nodes . . . . . **D. diminuta**

3 Lower glume absent . . . . . **D. orbata**
3. Lower glume present . . . . . **D. fumida**

Both *Digitaria diminuta* and *D. fumida* were not included in the four editions of the census of the Queensland Flora (Simon 1994, 1997, 2002; Simon *et al.* 2007) and the entry in Jacobs *et al.* (2008) for *D. breviglumis* refers to *D. diminuta*. *Digitaria breviglumis* differs from *D. diminuta* and *D. fumida* by its habit of 1–4 inflorescence branches, narrow leaf blades and sometimes fascicled culm branches and generally smaller stature.

As well as the diagnostic key to this group of species, descriptions and synonymy of the four related species will assist in the clarification of their circumscription.

Digitaria breviglumis (Domin) Henrard, *Monogr. Digitaria* 92 (1950); *Panicum breviglume* Domin, *Biblioth. Bot.* 85: 298 (1915). **Type:** Queensland. North Kennedy District: Dividing Range, west of Pentland, February 1910, *K.Domin* [*1058, 1059*] (holo: PR [photos BRI]; iso: BRI, K [photo BRI]).

Digitaria sp. (Mt Mulligan J.R.Clarkson 5821) (Simon 1994: 255, 1997: 158, 2002: 152; Simon *et al.* 2007: 153).

***Illustrations*:** Henrard (1950: 93); Tothill & Hacker (1983: 194, fig 4).

Perennial, rhizomatous. Flowering culms caespitose, 30–60 cm tall, 5–7-noded. Leaves: sheaths glabrous; ligule 0.3–0.5 mm long; blades flat or involute (mostly), 2.5–7.5 cm long, 0.5–0.8 mm wide, glabrous, smooth to scabrous. Inflorescence 2–10 cm long, on a distinct central axis or consisting of a single raceme, exerted at maturity; racemes 1–4, usually bearing spikelets to base, 1.5–2 cm long; central axis 0.5–1 cm long. Pedicels 0.6–2.8 mm long. Spikelets 10–15 on a typical lowermost primary branch, glabrous, paired, elliptic, 1.3–1.6 mm long, 0.5–0.6 mm wide. Glumes 2, slightly unequal; lower glume 0.2–0.4 mm long, obovate, nerveless, membranous, smooth, glabrous, truncate; upper glume 0.3–0.5 mm long, ovate, nerveless, glabrous, truncate. Lower floret: lemma 1.3–1.6 mm long, glabrous, 5-nerved, with nerves distinct; palea absent. Upper floret subequal to the lower floret; lemma 1.3–1.5 mm long, brown to black, cartilaginous, very finely transversely rugose, elliptic, acute, muticous.

***Additional selected specimens examined*: Northern Territory.** Darwin & Gulf: McMinns Bluff, near Pine Creek, Jan 1991, *Cowie 1476 & Dunlop* (BRI, CANB, DNA, MEL, PERTH). Barkly Tableland: Border Water hole, July 1971, *Latz 1628* (BRI, CANB). **Queensland.** Cook District: Mt Mulligan, Apr 1985, *Clarkson 5869* (BRI, CNS, L, MEL, NSW, PERTH). Burke District: 39.5 km N of Musselbrook, May 1995, *Johnson MRS835 & Thomas* (BRI, K). South Kennedy District: 16.5 km NNE of Yarrowmere, Apr 1992, *Thompson BUC647 &.Simon* (AD, BRI, CANB, NSW). Mitchell District: 67 km NE of Aramac, Mar 2000, *Thompson MUT123* (BRI). Leichhardt District: Snake Range N.P., SW of Springsure, May 1995, *McKosker 111* (BRI).

***Distribution and habitat*:** Tropical Northern Territory and Queensland (**Map 5**). It grows in a range of mixed *Eucalyptus*, *Corymbia*, *Acacia* and *Melaleuca* woodlands on sandstone and skeletal soils.

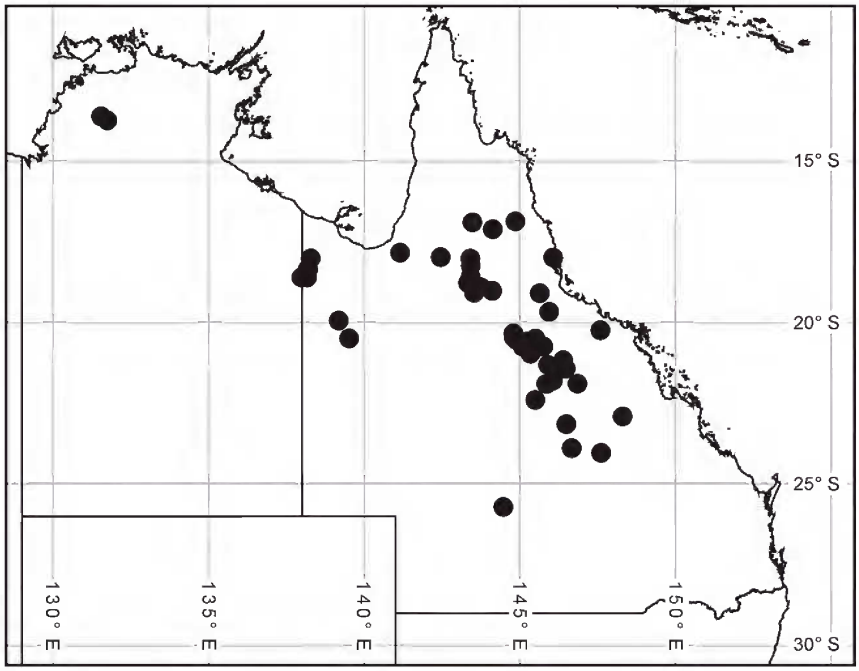
***Phenology*:** Flowering January to August; also October.

***Notes*:** *Digitaria breviglumis* is distinguished on the basis of its usually incurved and terete leaves and an inflorescence of one to many racemes in which the spikelets have a unique brown to black colour of the upper floret. The leaves can sometime be very narrow and filiform and the branches fascicled at the nodes.

Digitaria diminuta Hughes, *Bull. Misc. Inform. Kew* 1923: 312 (1923). **Type:** New South Wales. McIntyre River, *s.dat.*, *J.E.Ker s.n.* (holo: K [photo BRI]; iso: BRI).

***Illustrations*:** Henrard (1950: 187); Tothill & Hacker (1983: 194, fig 12); Jacobs *et al.* (2008: 214 [as *D. breviglumis*] and 219 [as *D. orbata*]).

Perennial. Flowering culms caespitose, 10–65 cm tall, 2–4-noded. Leaves: sheaths hairy or glabrous; ligule 0.4–0.8 mm long; blades 3–9 cm long, 0.2–0.5 mm wide, hairy or glabrous. Inflorescence on a distinct central axis; racemes 4–10, usually bearing spikelets to base, not long and rigid, 3.5–15 cm long. Pedicels 0.5–1 mm long. Spikelets 34–80 on a typical lowermost primary branch, glabrous, paired, elliptic, 1.3–1.9 mm long, 0.55–0.75 mm wide. Glumes 2; lower glume 0.16–0.43 mm long, ovate, nerveless, membranous, smooth, glabrous, cleft or obtuse or rounded; upper glume 0.4–0.9 mm



Map 5. Distribution in northern Australia of *Digitaria breviglumis*

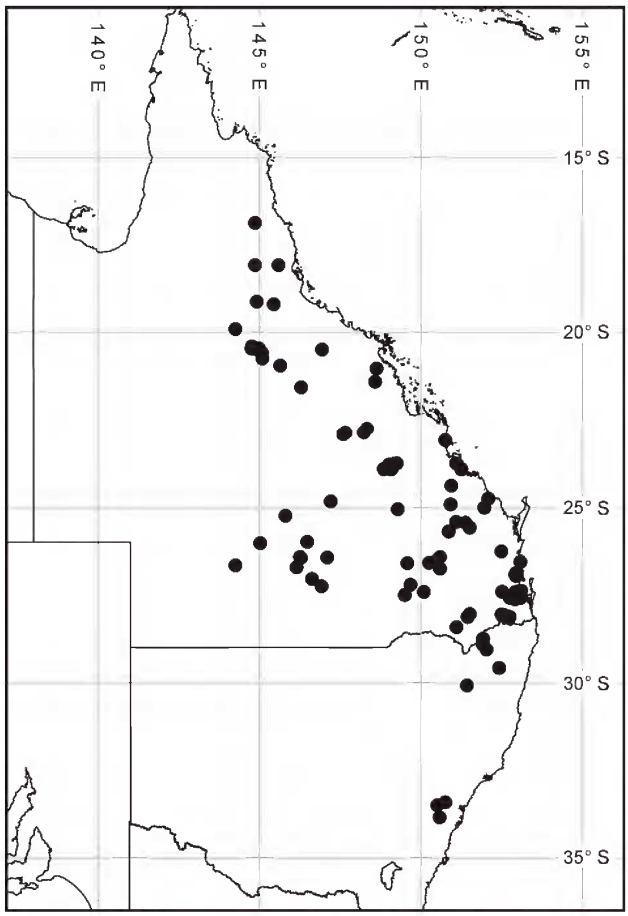
long, ovate to oblong, 3-nerved, with ciliate margins and submargins, glabrous, rounded or truncate or cleft, muticous. Lower floret: lemma 1.2–1.8 mm long, glabrous, with a glabrous first internerve space, with equal internerve spacing or with the first internerve space wider than the second, with margins or submargins glabrous, 7-nerved; palea lanceolate or ovate. Upper floret overtopping the lower floret; lemma 1.2–1.8 mm long, yellow, cartilaginous, muricate, elliptic to obovate, acute, muticous.

***Additional selected specimens examined*: Queensland**: Cook District: Mt Mulligan, Apr 1985, *Clarkson 5785* (BRI, CNS). Burke District: near source of Poison Creek, about 90 miles [144 km] N of Hughenden, Mar 1935, *Blake 8474* (BRI, CANB, K, NSW). North Kennedy District: *c.* 5 miles [8 km] SE of Clarke River, Telegraph Station, July 1954, *S.T.Blake 19434* (BRI, CANB, NSW, PERTH). South Kennedy District: 21 km NW of Hyde Park Homestead, Apr 1992, *Thompson BUC569A & Simon* (AD, BRI, DNA, NSW, PERTH). Mitchell District: White Mountains N.P., Apr 2000, *Thompson HUG734* (BRI). Leichhardt District: N slope of Blackdown Tableland [N.P.], S of Dingo, May 1976, *Jacobs 2592 & Rodd* (BRI, NSW). Warrego District: Charleville, Apr 1936, *Blake 11066* (BRI, DNA, PERTH). Maranoa District: Boatman Station, Mar 1947, *Everist 2833* (BRI, K, NSW, US). Burnett District: 7–8 miles [11–13 km] S of Eidsvold, Mar 1966, *Blake 22643* (AD, BRI, CANB, NSW, PERTH). Wide Bay District: 11 miles [17 kms] NW of Gin Gin, Mar 1966, *Blake 22410* (AD, BRI, CANB, DNA, K, L, MO, NSW, PERTH). Darling Downs District: N of Jackson, Mar 1953, *Blake 19138* (AD, BRI, K, MO, NSW). Moreton District: Mt Ngungun [Glasshouse Mountains N.P.], Mar 1931, *Hubbard 5925* (BRI, K). **New South Wales.** Slopes of Blue Mts towards Katoomba, Apr 1931, *Hubbard 8435* (BRI, K, NSW).

***Distribution and habitat*:** Tropical and subtropical Queensland to central New South Wales (**Map 7**). It grows in a range of *Eucalyptus*, *Corymbia*, *Acacia*, *Callitris* and *Melaleuca* woodlands on a variety of soils.

***Phenology*:** Flowering throughout the year.

***Notes*:** *Digitaria diminuta* differs from *D. breviglumis* by having at least four inflorescence branches and a 7-nerved lower lemma. In addition, the upper glume is 3-nerved (nerveless in *D. breviglumis)* and the culm branches are never fascicled at the nodes.



Map 6. Distribution in eastern Australia of *Digitaria diminuta*

Digitaria orbata Hughes, *Bull. Misc. Inform. Kew* 1923: 312 (1923). **Type:** Queensland. North Kennedy District: Herbert's Creek, *s.dat.*, *Bowman s.n.* (holo K [photo BRI]; iso: BRI, MEL).

***Illustrations*:** Henrard (1950: 508); Tothill & Hacker (1983: 194, fig 18).

Perennial, rhizomatous. Flowering culms caespitose, 40–85 cm tall, 3–5-noded. Leaves: sheaths glabrous; ligule 1.6–4 mm long; blades flat, 6–25 cm long, 1.8–5.5 mm wide, glabrous, scabrous. Inflorescence 2–14 cm long, on a distinct central axis; racemes 2–10, usually bearing spikelets to base, not long and rigid, 7–16 cm long. Pedicels 0.4–0.8 mm long. Spikelets 30–70 on a typical lowermost primary branch, hairy or rarely glabrous, paired, elliptic, 1.3–1.8 mm long, 0.47–0.8 mm wide. Lower glume absent; upper glume 0.2–0.6 mm long, less than half the length of spikelet, ovate to elliptic, nerveless, glabrous, rounded to truncate or cleft. Lower floret: lemma 1.1–1.6 mm long, glabrous or occasionally with a few villous hairs on the area between the last lateral nerve and margin, 3–5-nerved; palea vestigial to absent. Upper floret overtopping the lower floret or subequal to the lower floret; lemma 1.2–1.7 mm long, brown, cartilaginous, muricate, elliptic, apically rounded to acute, apiculate.

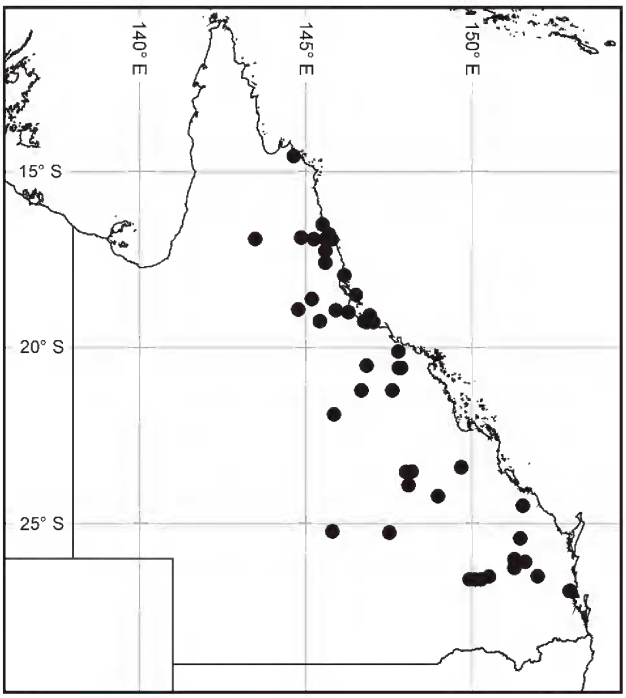
***Additional selected specimens examined*: Queensland.** Cook District: Mt Mulligan, Apr 1985, *Clarkson 5883* (BRI, CNS, MEL, PERTH). North Kennedy District:

Dunk Island, Aug 1951, *Blake 18875* (BRI, CANB). South Kennedy District: Along the Collinsville – Mt Coolon Road, 800 m southwest of its junction with Caves Creek, Jan 1996, *Pollock 299 & Champion* (BRI, CANB). Leichhardt District: Humboldt, S of Blackwater, Jan 1997, *Fensham 2981* (BRI). Port Curtis District: Dawes Range, Apr 1937, *White 10813* (BRI). Mitchell District: 93 km N of Langlo Crossing, July 1975, *Beeston 1356C* (BRI). Warrego District: Mt Brandon Station, Apr 1936, *Blake 11149* (BRI, CANB, DNA, PERTH). Burnett District: near Durong, May 1940, *Blake 14245* (BRI, CANB). Darling Downs District: Palardo, Feb 1935, *Blake 7640* (BRI).

***Distribution and habitat*:** *Digitaria orbata* is broadly sympatric with *D. fumida* in tropical and subtropical Queensland (**Map 7**) where it grows in a range of woodlands on a variety of soils.

***Phenology*:** Flowering March to August.

***Notes*:** This species differs from *Digitaria fumida* only by lacking a lower glume. In *AusGrass* (Sharp & Simon 2002) there are a couple of erroneously cited illustrations from Wheeler *et al.* (1990) with attribution to the wrong species. The illustration under *D. orbata* is *D. ischaemum* and the one under *D. hystrichoides* is *D. orbata*. *D. orbata* does not occur in New South Wales and the record by Jacobs *et al.* (2008) refers to *D. diminuta*.



Map 7. Distribution in Queensland of *Digitaria orbata*

Digitaria fumida S.T.Blake, *Proc. Roy. Soc. Queensland* 84: 62 (1973). **Type:** Queensland. Moreton District: Northgate, Brisbane, 15 May 1937, *S.T.Blake 12970* (holo: BRI).

Panicum parviflorum R.Br. var. *pilosum* Benth. (as '*pilosa*'), *Fl. Austral.* 7: 471 (1878). **Type:** Queensland. Moreton District: Moreton Bay, *s.dat.*, *F.M.Bailey [41]* (holo: MEL; iso: BRI; K, L *n.v.*).

Perennial, rhizomatous. Flowering culms decumbent, 30–80 cm tall, 3–10-noded. Leaves: sheaths hairy to glabrous; ligule 0.5–2.7 mm long; blades flat to involute, 4–18 cm long, 1.5–4.5 mm wide, hirsute or glabrous, smooth to scabrous. Inflorescence 1.5–7 cm long, on a distinct central axis; racemes 2–10, usually bearing spikelets to base, 3.5–15 cm long. Pedicels 0.5–1 mm long. Spikelets 34–80 on a typical lowermost primary branch, glabrous, paired or in 3's, elliptic, 1.3–1.9 mm long, 0.55–0.75 mm wide; lower glume 0.16–0.43 mm long, ovate, nerveless, membranous, smooth, glabrous; upper glume 0.4–0.9 mm long, ovate to oblong, 0 or 1-nerved (lateral nerves occasionally poorly developed), with ciliate margins and submargins, glabrous. Lower floret: lemma 1.2–1.8 mm long, glabrous, 3–7-nerved; palea vestigial or absent. Upper floret overtopping the lower floret; lemma 1.2–1.8 mm long, brown, cartilaginous, muricate, elliptic to obovate, acute, mucronate.

***Additional selected specimens examined*: Queensland.** Cook District: 6 km SW of Cape Flattery, May 1990, *Clarkson 8626 & Neldner* (BRI, K, NSW). Burke District: Poison Creek, Feb 1931, *Hubbard 7727 & Winders* (BRI, K). North Kennedy District: Mt Abbot, Aug 1992, *Bean 4831* (BRI). South Kennedy District: 5 km along Burton Downs – Goonyella Road, May 1997, *Thompson 295* (BRI). Leichhardt District: Laglan Road, NW of Clermont, Jun 1999, *Johnson 126 & Turpin* (BRI). Port Curtis District: Curtis Island, Mar 1966, *Blake 22512* (AD, BRI, CANB, DNA, K, MO, PERTH). Maranoa District: Mt Moffatt N.P., Apr 1996, *Addicott 138* (BRI). Burnett District: Narayen, Mar 1971, *Pederson N167* (BRI). Wide Bay District: between Childers and Howard, Mar 1966, *Blake 22404* (BRI, CANB, NSW). Darling Downs District: Kindon Station, Dec 1938, *Smith 604* (BRI). Moreton District: Northgate, May 1937, *Blake 12970* (AD, BRI, CANB, DNA, K, L, MO, NSW).

***Distribution and habitat*:** *Digitaria fumida* is broadly sympatric with *D. orbata* in tropical and subtropical Queensland (**Map 8**) where it grows in a range of *Eucalyptus* woodlands on mainly sandy soils. It is often abundant in the summer season following fire in the previous year.

***Phenology*:** Flowering mostly November to August.

***Notes*:** This species differs from *Digitaria orbata* by having a lower glume.

5. A new species of *Entolasia* Stapf

Entolasia minutifolia B.K.Simon, **species nova** *E. marginatae* (R.Br.) Hughes similis sed laminis foliorum 1–2.5 cm brevioribus rigidis differt. **Typus:** Queensland. Darling Downs District: between Miles and Drillham, 19 February 1935, *S.T.Blake 7709* (holo: BRI; iso: AD, CANB, DNA, NSW, PERTH).

Entolasia sp. A, *Flora of Australia* 43: 353, Map 1114 (2002).

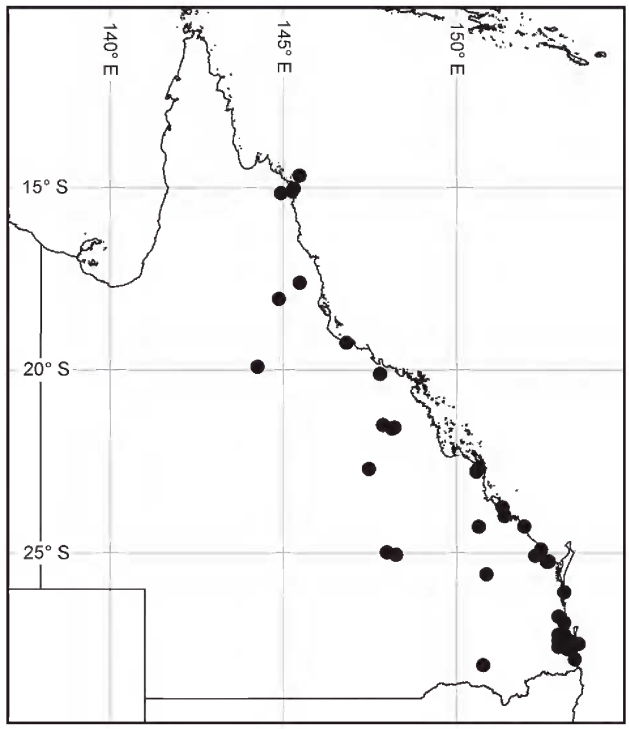
Entolasia sp. (Miles S.T.Blake 7709) (Simon *et al.* 2007: 155).

Flowering culms 5–45 cm tall, 2–6-noded. Ligule *c.* 0.2 mm long. Leaf blades flat, 1–2.5 cm long, 1.5–3.5 mm wide. Inflorescence 0.6–3 cm long. Primary branches 0.4–0.9 cm long, 0.2–0.3 cm wide. Spikelets 3–4 on a typical lowermost primary branch, elliptic, 2.2–2.5 mm long, 1–1.3 mm wide. Glumes: lower glume 0.4 mm long, nerveless; upper glume 2.2–2.5 mm long, lanceolate, muticous. Lower floret: lemma 2.3–2.4 mm long. Upper floret: lemma 2.1 mm long, yellow or brown, smooth, acute; palea smooth.

***Additional specimens examined*: Queensland.** Darling Downs District: Near Kogan, Feb 1938, *Blake 13266* (BRI); *ditto loc.*, Mar 1953, *Blake 19180* (BRI, CANB); 5 miles [8 km] N of Karara on road to Leyburn, Apr 1971, *Blake 23596* (BRI, K, MO, NSW); Ballandean [Girraween] N.P., NE of Wallangarra, Jan 1940, *Blake 14137* (BRI, CANB, NSW); S.F.101 Devine, Honeysuckle Creek, 20 km NE of Inglewood, Oct 2006, *Forster PIF32122 & Thomas* (BRI).

***Distribution and habitat*:** Restricted to the Darling Downs District of Queensland (**Map 9**) where it grows in *Eucalyptus*, *Acacia* and *Callitris* forests and woodlands on sandy soils.

***Phenology*:** Flowering October to April.



Map 8. Distribution in Queensland of *Digitaria fumida*

***Notes*:** This species differs from *Entolasia marginata* by the much smaller stature with leaf blades less than 3 cm long and rigid in texture. It may prove to be a form of the latter species; however, molecular study is required to determine this. In the meantime the characteristic minute leaf blades and fairly narrow geographic range of this entity are factors persuading me to recognise it as a separate species.

***Etymology*:** Named for the minute leaf blades.

6. A new species and a new name application in *Isachne* R.Br.

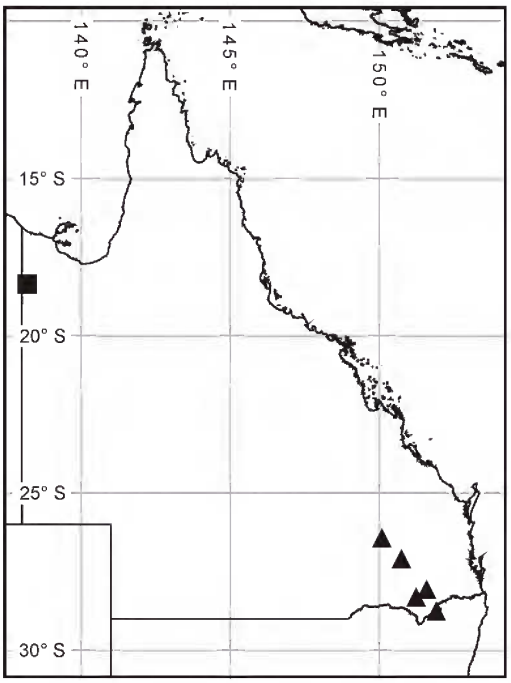
The latest treatment of Australian *Isachne* species (Sharp & Simon 2002) has four species. One (*I. sharpii* B.K.Simon) is treated as new in this paper. The name *I. pulchella* Roth in Roem. & Schult. has been misapplied to another species *I. minutula* (Gaudich.) Kunth in a recent revision of *Isachne* sect. *Isachne* for Malesia (Iskandar & Veldkamp 2004).

Isachne minutula (Gaudich.) Kunth, *Rév. Gram.* 2: 407, t.117 (1831); *Panicum minutulum* Gaudich., *Freyc., Voy. Uranie* 410 (1829); *Isachne miliacea* Roth var. *minutula* (Gaudich.) Fosberg & Sachet, *Micronesica* 18: 55 (1984). **Type:** Marianas Islands, *s.dat.*, *Gaudichaud s.n.* (holo: P, *n.v.*).

Isachne pulchella auct., *non* Roth in Roem. & Schult. (Iskandar & Veldkamp 2004: 168).

***Illustrations*:** Bailey (1913: 585), as *I. myosotis* Nees; Sharp & Simon (2002) as *I. pulchella* Roth in Roem. & Schult.

Annual. Flowering culms 3–35 cm tall, 2–5-noded. Ligule a fringe of hairs, 0.8–1.2 mm long. Leaf blades 2–5 cm long, 2–8 mm wide. Inflorescence 2–12 cm long. Primary branches 0.6–5 cm long. Spikelets 4–14 on a typical lowermost primary branch, with the upper floret fertile, dorsally compressed, 1–1.6 mm long, 0.7–0.9 mm wide; lower glume elliptic, 1–1.6 mm long, 5–7-nerved, glabrous; upper glume 1.1–1.5 mm long, elliptic to obovate, 5–



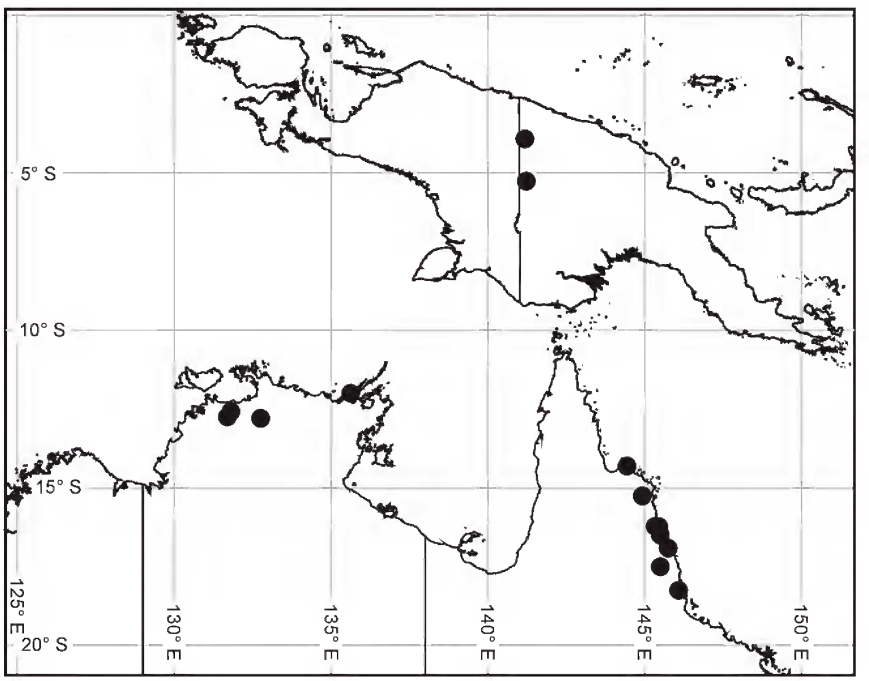
Map 9. Distribution in Queensland of *Entolasia minutifolia* ▲ and *Paspalidium johnsonii* ■

7-nerved, glabrous or scabrous. Lower floret male; lemma 1–1.5 mm long, 0.7–0.9 mm wide, chartaceous, 3-nerved, with apex acute to rounded. Upper floret bisexual, subequal to the lower floret; lemma 1–1.3 mm long, white, smooth; palea smooth. Anthers 0.8–0.9 mm long.

***Additional selected specimens examined*: Western Australia.** Kimberley: Kimbolton Homestead, May 1993, *Mitchell 3093* (BRI, PERTH). **Northern Territory.** Darwin & Gulf: 10.8 km ESE of Nourlangie Ranger Station on Pine Creek Road, May 1980, *Lazarides 8815* (BRI, CANB); Elcho Island, Jul 1975, *Latz 6277* (BRI, DNA). **Queensland.** Cook District: Freshwater, near Cairns, Jul 1943, *Blake 14977* (BRI, CANB, NSW). North Kennedy District: Cardwell, Sep 1935, *Blake 9692* (BRI, CANB, K, MEL, MO, NSW, PERTH).

***Distribution and habitat*:** *Isachne minutula* occurs in damp shaded forests and swampy areas from tropical Asia (Indian subcontinent), Indo-China, Malesia and Papuasia and across tropical Australia from the Kimberley region of Western Australia, through the Top End of the Northern Territory to northern coastal Queensland (**Map 10**).

***Phenology*:** Flowering March to July.



Map 10. Distribution in Australia and New Guinea of *Isachne minutula*

***Notes*:** Webster (1987) reports this species as being introduced to Australia under the misapplied name *Isachne pulchella*. However, information on herbarium labels from all localities indicate that it is a native component of wetlands in northern Australia.

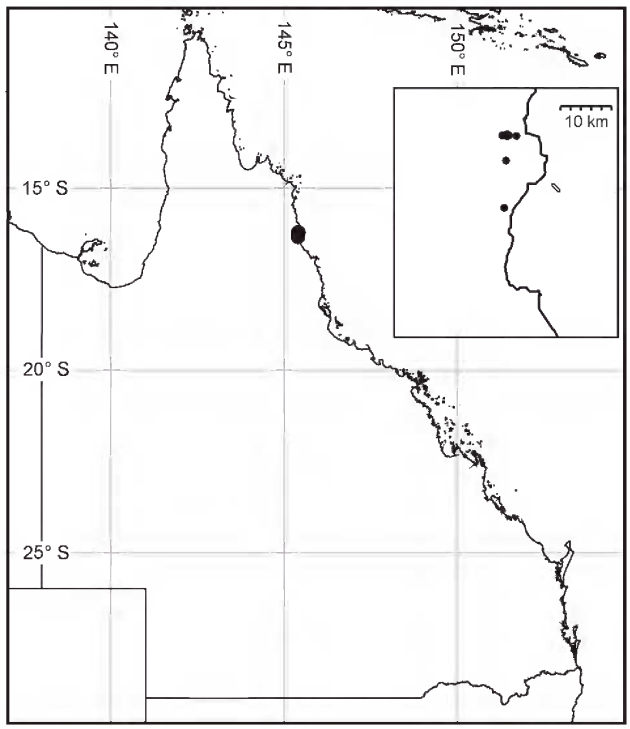
Isachne sharpii B.K.Simon, **species nova** *I. globosae* (Thunb.) Kuntze similis sed spiculis maioribus, glumis setiferis et apicibus acutis, flosculis ambobus bisexualibus differt. **Typus:** Queensland. Cook District: Palm Road, Cape Tribulation, 21 April 2001, *D.Sharp 293* (holo: BRI; iso: CANB, K, L, MO, NSW).

Isachne sp. A in AusGrass (Sharp & Simon 2002); *Flora of Australia* 43: 340, Map 924 (2002).

Isachne sp. (Cape Tribulation R.L.Jago 4560) (Simon *et al.* 2007: 158).

***Illustration*:** Sharp & Simon, *AusGrass* (2002) as *Isachne* sp. A.

Annual. Flowering culms 26–44 cm tall, 5–10-noded. Ligule a fringe of hairs, 1.5–1.7 mm long. Leaf blades 2.5–5.5 cm long, 7–13 mm wide. Inflorescence 3.5–4 cm long. Primary branches 1–1.4 cm long. Spikelets 3–7 on a typical lowermost primary branch, with both florets fertile, dorsally compressed, elliptic, 2.5–2.8 mm long, 1.2–1.5 mm wide; lower glume ovate, 2.5–2.8 mm long, 9-nerved, hairy, setose; upper glume 2.5–2.8 mm long, ovate, 9–10-nerved, hairy. Lower floret bisexual; lemma *c.* 2 mm long and 1.5 mm wide, cartilaginous to indurate, smooth, 5-nerved, with apex rounded; palea *c.* 1.8 mm long and 1.3 mm wide, cartilaginous to indurate; anthers 3, pale, to 1.5 mm long; caryopsis to 1.2 long and 0.8 mm, finely muricate, reddish. Upper floret bisexual, subequal to the lower floret; lemma *c.* 2 mm long and 1.5 mm wide, cartilaginous to indurate, smooth, 5-nerved; palea *c.* 1.8 mm long and 1.3 mm wide, cartilaginous to indurate; anthers 3, pale, to 1.5 mm long. **(Fig. 3.)**



Map 11. Distribution in Queensland of *Isachne sharpii* (inset shows local distribution)

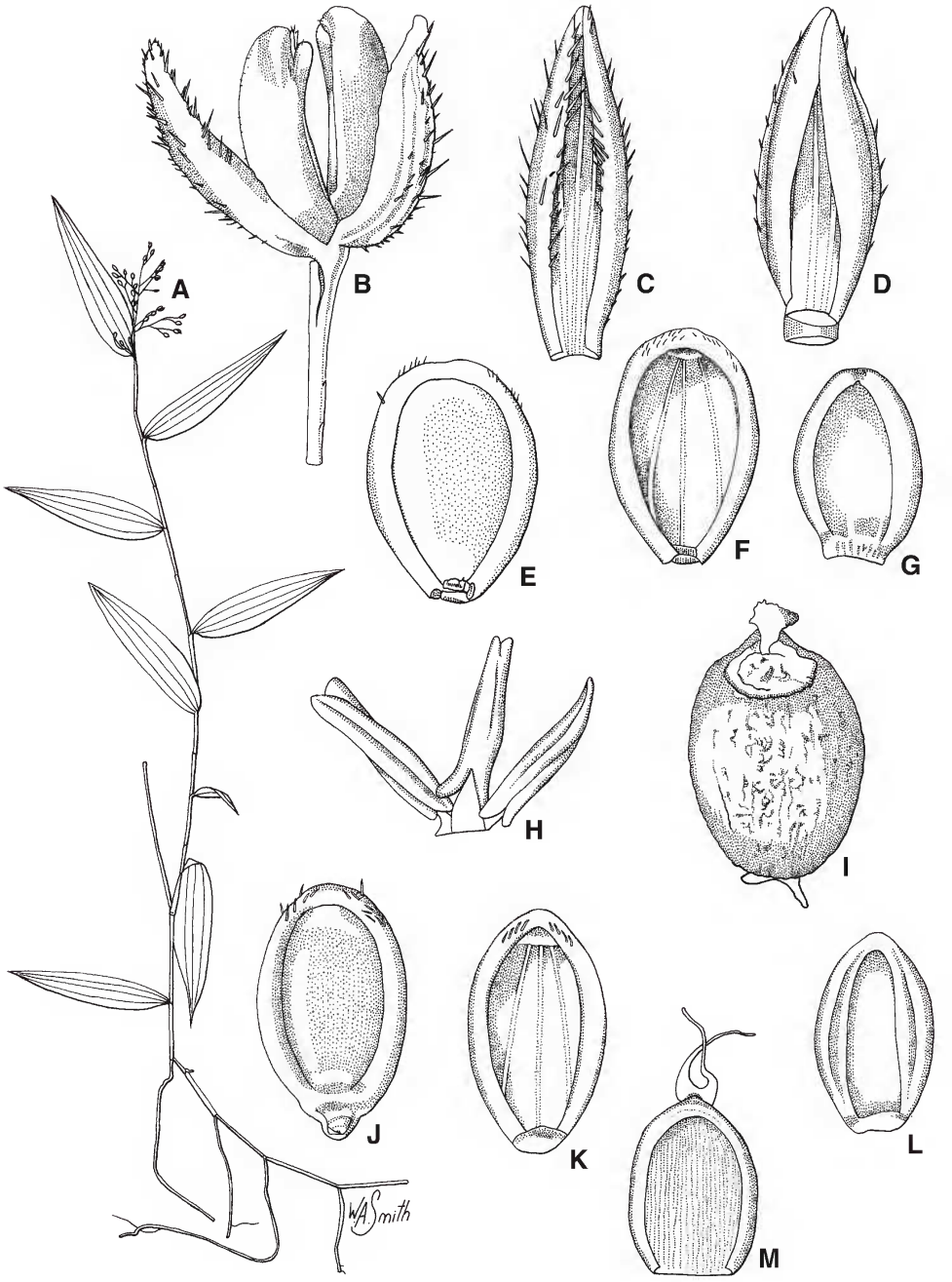


Fig. 3. ***Isachne sharpii***. A. habit × 0.4. B. spikelet, lateral view. C. lower glume; D. upper glume. E. lower floret. F. lower lemma. G. lower palea. B–G × 16. (C–G front view). H. anthers of lower floret. I. caryopsis of lower floret. H–I × 32. J. upper floret. K. upper lemma. L. upper palea (J–L front view). M. young caryopsis of upper floret. J–M × 16. All from *Sharp 293* (BRI). Del. W.Smith.

***Additional specimens examined*: Queensland.** Cook District: Palm Road, Cape Tribulation, Dec 1997, *Jago 4560* (BRI); *ditto loc.*, May 2001, *Jago 5978* (BRI); *ditto loc.*, Jun 2002, *Gray & Jones 8188* (BRI, CNS); *ditto loc.*, Nov 2006, *Simon 4330 & Jago* (BRI, K, US); Cape Tribulation Road, *c.* 700 m N of Daintree River ferry, Oct 2008, *Jago 7206* (BRI); Cape Tribulation Road, *c.* 1.2 km N of Daintree River ferry, Aug 2008, *Jago 7156* (BRI).

***Distribution and habitat*:** This species has only been collected from the understorey of rainforest or swamps dominated by *Licuala ramsayi* in a fairly restricted region of the Daintree rainforest, north-east Queensland (**Map 11**).

***Phenology*:** Flowering October to August.

***Notes*:** This species differs from the more widespread species *Isachne globosa* by the glumes being covered with bristles and having pointed apices as opposed to glabrous glumes rounded at the apex and by both florets being fertile. Both species have larger spikelets than the two other Australian species *I. confusa* Ohwi and *I. minutula*.

***Etymology*:** Named for Donovan Sharp, co-author of *AusGrass* (Sharp & Simon 2002) and collector of the type specimen.

7. A change of status in *Oplismenus* P.Beauv.

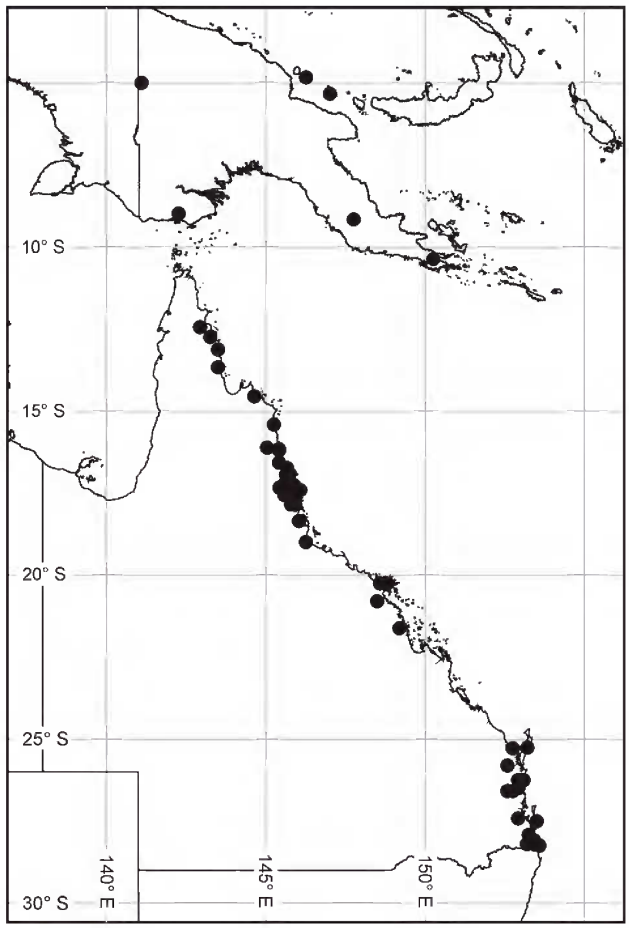
The genus *Oplismenus* consists of 11 species (Simon *et al.* 2010) native to the tropics and subtropics, with 5 species native to Australia. It is a genus of very similar species and there have been two attempts at a world-wide taxonomic treatment (Davey & Clayton 1978; Scholz 1981). The latter has a few species with many infraspecific taxa, whereas in the former the species rank is assigned to recognisable morphological forms. This may be considered a more practical approach, which I am adopting for the *FOA* account, although it may be difficult to extend the application of this species concept for all species beyond Australia (Davey & Clayton 1978).

Oplismenus mollis (Domin) Clifford & Evans ex B.K.Simon **stat. nov.**; *Oplismenus undulatifolius* var. *mollis* Domin, *Biblioth. Bot.* 85: 329 (1915). **Type:** Queensland. Moreton District: Tambourine Mountains, March 1910, *K.Domin 1311* (lecto: PR [here selected] [photo at BRI]; isolecto: BRI).

***Notes*:** Preliminary work towards an Australian revision of *Oplismenus* by Clifford & Evans (unpublished ms.) elevated this Australian entity to species rank and I agree with this position. An examination of the isotype of the basionym of *O. undulatifolius* (Ard.) Roem. & Schult. (*Panicum undulatifolium* Ard.) from M and of illustrations of this taxon in Scholz (1981, fig. 38) and in Trinius (1829, fig. 192) shows this species to differ from the Australian entity by the spikelets not being fascicled in the same way on the inflorescence racemes, by the leaf blades being broader and glabrous and the leaf sheaths being hairy with longish hairs.

Diagnostic features of *Oplismenus mollis* include the smooth awn, the lowermost primary branches reduced to fascicles and densely short and soft pubescence of the culm, sheaths and blades. It differs from *O. imbecillis* (R.Br.) Roem. & Schult., a related Australian species, by the racemes being in distinct fascicles and by a dense leaf blade indumentum.

***Distribution and habitat*:** *Oplismenus mollis* is distributed throughout coastal Queensland and north-east New South Wales; it is also in New Guinea (**Map 12**). It occurs in rainforest or its margins.



Map 12. Distribution in Australia and New Guinea of *Oplismenus mollis*

8. Recognition of both *Paractaenum* P.Beauv. and *Plagiosetum* Benth.

Webster (1987) placed *Plagiosetum* in synonymy with *Paractaenum* based on a similar type of bristle structure. However, there are a number of diagnostic morphological features readily observable between the two genera (**Table 2**) that do not justify placing them together.

Table 2. Comparison of character states for *Paractaenum* and *Plagiosetum*

Paractaenum	*Plagiosetum*
Primary inflorescence branch producing simple unbranched bristles, each accompanied by a spikelet	Primary inflorescence branch producing 2–3 spikelets with each spikelet subtended by branched bristles
Rachilla between the glumes not distinct	Rachilla between the glumes distinct
Pedicels less than 0.5 mm long	Pedicels 1.2–3.4 mm long

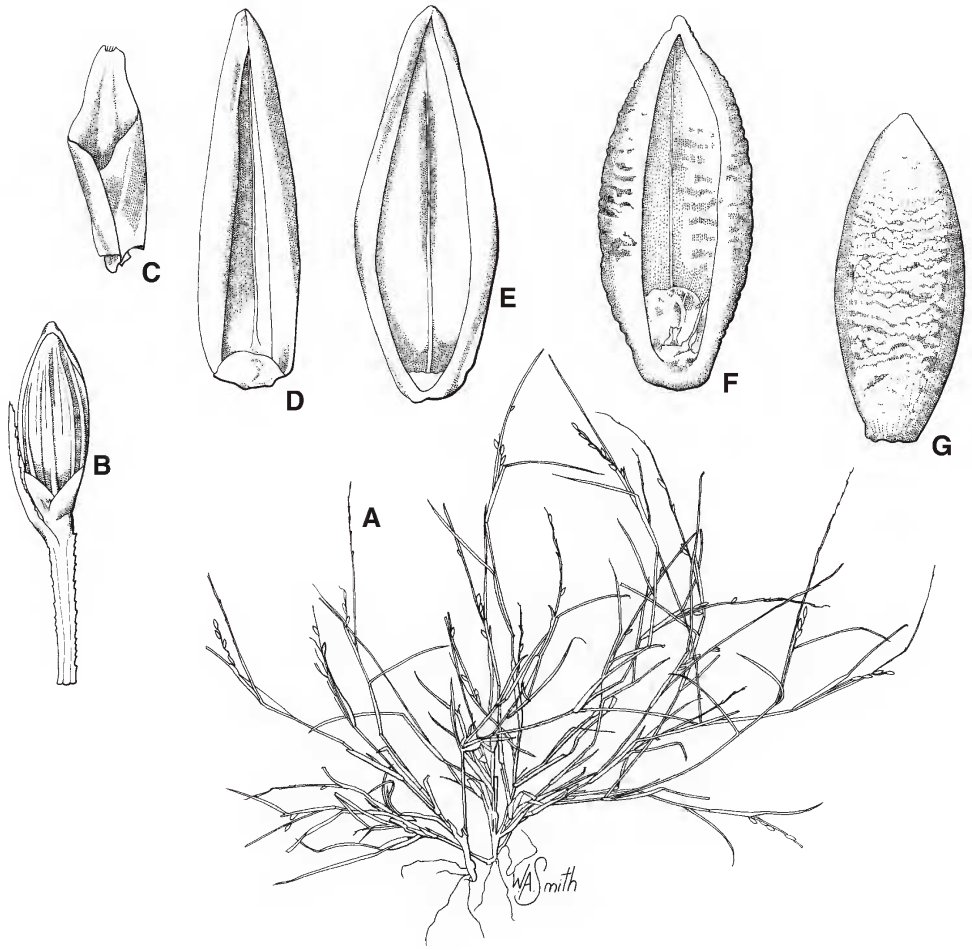


Fig. 4. ***Paspalidium johnsonii***. A. habit × 0.3. B. spikelet and bristle × 6. C. lower glume. D. upper glume. E. lower lemma. F. upper floret. (C–F front view). G. upper floret, back view. C–G × 0.3. All from *Johnson MRS792 & Thomas* (BRI). Del. W.Smith.

Hughes (1923) re-examined and emended the description of *Paractaenum novae-hollandiae* P.Beauv. She noted that there was a closer affinity of the genus *Paractaenum* to the genus *Plagiosetum*, with regards to the shape and nervation of the glumes and the flattened rachis, than there was to *Panicum*, under which an infraspecific taxon of *Paractaenum novae-hollandiae* (subsp. *reversum* (F.Muell.) R.D.Webster) had been described as *Panicum reversum* F.Muell. However, she retained both genera and two other contemporary references also maintain the distinction between these genera (Clayton & Renvoize 1986; Jacobs *et al.* 2008). A recent *ndhF*-based phylogeny of *Setaria* and allied genera of the bristle clade of panicoid grasses (Kellogg *et al.* 2009) placed *Plagiosetum refractum* (F.Muell.) Benth. in a clade between *Paspalidium rarum* (R.Br.) Hughes and the other Australian species of *Paspalidium*. *Paractaenum novae-hollandiae* has not yet been placed in the molecular based phylogeny and this should better clarify its relationship with *Plagiosetum*.

9. A new species of *Paspalidium* Stapf

Paspalidium is a genus of 42 species, with 22 native in Australia (Simon *et al.* 2010).

The key distinctions between some of the Australian species of *Paspalidium* appear very fine in some cases and more study is needed to establish whether some of these species should be maintained. A new species from the Burke District of Queensland falls into this category.

Paspalidium johnsonii B.K.Simon, **species nova** *P. raro* (R.Br.) Hughes similis spiculis brevioribus et culmis plus decumbentibus differt. **Typus:** Queensland. Burke District: Amphitheatre, 40 km N of Musselbrook Mining camp, 3 May 1995, *R.W.Johnson MRS792 & M.B.Thomas* (holo: BRI; iso: DNA, K *distribuendi*).

Paspalidium sp. (Musselbrook R.W.Johnson+ MRS792) (Simon *et al.* 2007: 161).

Annual. Flowering culms decumbent, ultimately erect, 7–20 cm long, 3–5-noded, sheaths not overlapping. Leaves glabrous; sheaths with eciliate margins; ligule 0.3–0.4 mm long; blades involute, 1–4 cm long, 5–7 mm wide. Inflorescence 1.5–4 cm long, lower branches shorter than adjacent internode of axis between them, branches reduced to 1 (rarely 2) spikelets, 0.4–0.6 cm long, appressed to the main axis. Spikelets 2.1–2.5 mm long, 0.9–1 mm wide and 1 or 2 on a typical lowermost primary branch, dorsally compressed to planoconvex, elliptic. Glumes glabrous; lower glume *c.* 1.5 mm long, triangular to ovate, 5-nerved; upper glume 2.1–2.5 mm long, elliptic, 7-nerved, muticous. Lower floret sterile; lemma 2.1–2.5 mm long, acute, 5-nerved. Upper floret curved in profile; lemma 2.1–2.4 mm long, yellow, finely transversely rugulose, yellow. **Fig. 4.**

***Distribution and habitat*:** Only known from the type locality in Queensland (**Map 9**) where it was collected from open woodland on shallow sandy soil overlying a sandstone escarpment.

***Phenology*:** Flowering April to May.

***Notes*:** This species is similar to *Paspalidium rarum* but with much smaller spikelets and the culms are more decumbent.

***Etymology*:** Named for Dr R.W. (Bob) Johnson, former Director of the Queensland Herbarium (1974–1990) and collector of the type specimen.

10. A new species and a new variety of *Pseudoraphis* Griff.

In November 2003 Robert Jago sent in for identification a delicate grass from an old swale within the Bale Condominium development at Port Douglas, north-east Queensland. An examination of the spikelets revealed that he had collected a very unique grass, in terms of its unusual spikelet morphology. In that it was not able to be readily identified presented a situation whereby a new plant species, and possibly one having a threatened status, was present in an area where existing native vegetation was destined to be cleared and replaced by landscaped vegetation of exotic horticultural plants. Fortunately attention was drawn to the presence of this unique grass at a stage where the developers were in a position to alter drainage plans that would otherwise have radically altered the ground cover of the swale. It has been possible to avoid for now the destruction of this grass and to retain this patch of native vegetation within the condominium boundary.

It was initially difficult to place this grass in the genus *Pseudoraphis* on account of the problem of observing the naked bristle at the apex of an inflorescence branch. The bristle, a feature that is diagnostic for the genus, is sometimes reduced or absent. *Pseudoraphis* is a genus of 10 species (Simon *et al.* 2010) of aquatic habitats from tropical and subtropical Asia to Australia.

Pseudoraphis jagonis B.K.Simon, **species nova** *P. minuta* (Mez) Pilger similis sed spiculis longioribus et laminis tenioribus differt. **Typus:** Queensland. Cook District: Port Douglas, 27 November 2003, *R.L.Jago 6610* (holo: BRI; iso: CANB, K, L, MO, NSW, SI *distribuendi*).

Pseudoraphis sp. (Port Douglas R.L.Jago 6610) (Simon *et al.* 2007: 162).

Flowering culms 15–40 cm tall, 7–14-noded. Nodes pubescent. Leaves; ligule 0.2–0.3 mm long; blades 1–6 cm long, 0.5–1.5 mm wide.

Fig. 5. ***Pseudoraphis jagonis***. A–C. spikelet, pedicel and bristle of three spikelets, showing variation in bristle length, lateral view × 12. D. lower glume, front view. E. upper glume, front view. F. lower lemma, front view. G. lower palea, front view. H. anthers. I. upper lemma, back view. D–I × 40. All from *Jago 6610* (BRI)). Del. W.Smith.

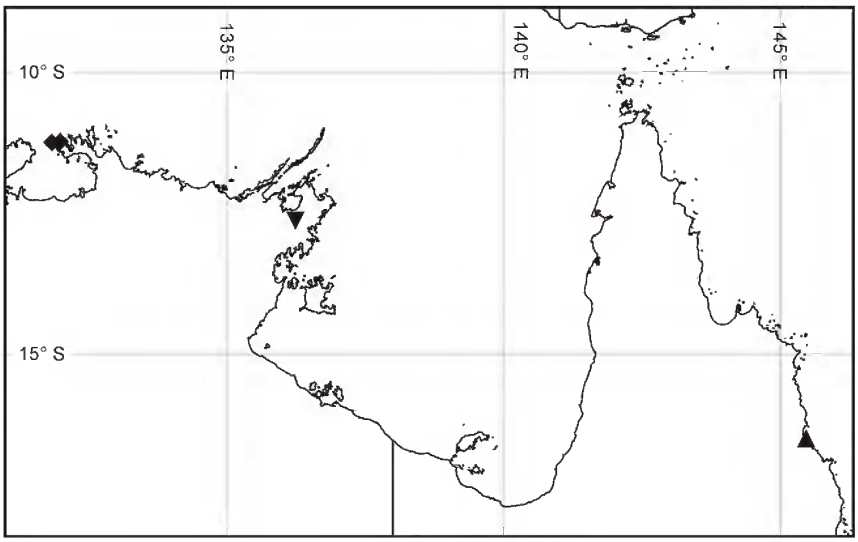
Inflorescence 2–5 cm long with primary branches spreading; bristles 2–3 mm long. Pedicels 0.5–9 mm long. Spikelets 2–4 on a typical lowermost primary branch, 4–5 mm long, 0.6–0.8 mm wide. Glumes: lower glume 0.2–0.3 mm long, broadly oblong; upper glume 4–5 mm long, 13–15-nerved, glabrous to scabrous. Lower floret: lemma 2.5–3 mm long, 0.8–0.9 mm wide, 7-nerved; palea 2–2.2 mm long; anthers 2, *c.* 1.3 mm long. Upper floret 1.5–1.7 mm long; lemma and palea membranous. **Fig. 5.**

***Additional specimens examined*: Queensland.** Cook District: Port Douglas, Nov 2006, *Simon 4328 & Jago* (infertile specimen) (BRI, L, K, NSW, US); *ditto loc.*, Oct 2005, *Wannan 4108 & Jago* (BRI); *ditto loc.*, Nov 2005, *Wannan 4137 & Gillanders* (BRI); ex Port Douglas, cultivated at Speewah, Feb 2006, *Wannan 4199* (BRI, CANB, L).

***Distribution and habitat*:** Restricted to Port Douglas, north-east Queensland where it is known from a condominium precinct (**Map 13**). Plants grow in damp soil in an old swale with *Dillenia alata*, *Lophostemon suaveolens*, *Pandanus solmslaubachii*, *Livistona muelleri* and *Melaleuca quinquenervia*.

***Phenology*:** Flowering October to November.

***Notes*:** The spikelet bristles, a general feature of the genus, are sometimes very short in this species.



Map 13. Distribution in northern Australia of *Pseudoraphis jagonis* ▲, *P. minuta* var. *minuta* ◆ and *P. minuta* var. *laevis* ▼

***Etymology*:** Named for Robert Jago, a keen plant collector from north Queensland.

Pseudoraphis minuta (Mez) Pilger, *Notizbl. Bot. Gart. Berlin-Dahlem* 10: 210 (1928); *Chamaeraphis minuta* Mez, *Notizbl. Bot. Gart. Berlin-Dahlem* 7: 48 (1917). **Type:** Vietnam: Tonkin, prope Hanoi ad paludum margines, 25 May 1886, *B.Balansa 1592* (lecto: BRI [designated here]; isolecto: L, P, US).

***Typification*:** The species was described as *Chamaeraphis minuta* by Mez (1917) with the citation of six syntypes (*C.B.Clarke 17040*, *B.Balansa 1592*, *B.Balansa 1593*, *B.Balansa 4779*, *Kurz s.n.*, *Keenan s.n.*). To avoid possible confusion concerning application of the name a lectotype is selected from a duplicate of *Balansa 1592*.

***Notes*:** This species is represented in Australia by very few specimens in herbaria and exists as two varieties, both known only from the Northern Territory (**Map 13**).

Pseudoraphis minuta var. **laevis** B.K.Simon, **varietas nova** *P. minuta* var. *minuta* similis sed glumis laevibus et glabris differt. **Typus:** Northern Territory. Darwin & Gulf: Goromuru River floodplain, 24 May 1992, *I.Cowie 2838* (holo: BRI; iso: CANB, CNS, DNA, K, L, MEL, MO, NSW, PERTH).

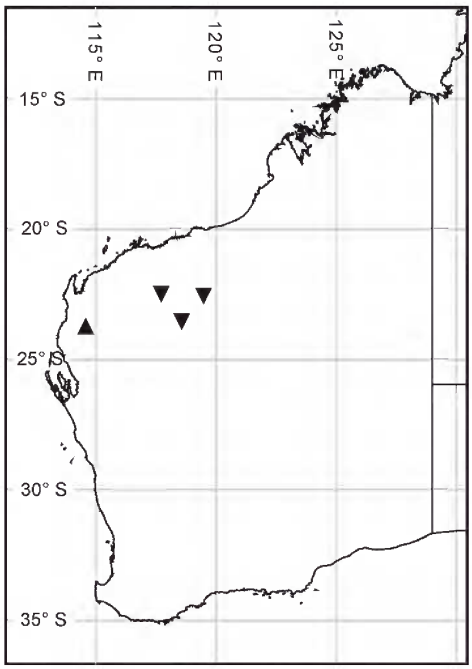
***Distribution and habitat*:** Only known from the Goromuru River floodplain of the Northern Territory, where it was observed as floating in shallow water (**Map 13**).

***Notes*:** The type variety, with tubercle based hairs on the glumes, extends from South-East Asia to the Northern Territory (**Map 13**). The only specimen that has been seen of the variety newly described here has glumes that are smooth and glabrous.

***Etymology*:** Named for the upper glume being smooth and glabrous.

11. A new combination in *Setaria* P.Beauv.

Veldkamp (1994) regarded *Setaria parviflora* (Poir.) Kerguélen to be "a very polymorphic species with an intricate nomenclature." He placed *Setaria pallide-fusca* Stapf & C.E.Hubb. in synonymy with *S. parviflora* on the basis of spikelet size (1.9–2.4 mm long). However, *S. parviflora* is a perennial with a short rhizome whereas *S. pallide-fusca* is an annual, and is currently regarded as a subspecies of *S. pumila* (Poir.) Roemer &



Map 14. Distribution in Western Australia of *Urochloa occidentalis* var. *occidentalis* ▲ and var. *ciliata*▼

Schultes by some authors (Sharp & Simon 2002; Rominger in Barkworth *et al.* 2003), although Clayton (1979) gives evidence of continuous variation between the two subspecies. As pointed out by Veldkamp (1994), if the subspecies is to be recognised, the epithet '*subtesselata*' has to have priority.

Setaria pumila subsp. **subtesselata** (Buse) B.K.Simon **comb. nov.**; *Setaria glauca* subsp. *subtesselata* Buse, *Pl. Jungh.* 3: 369 (1854). **Type:** *Junghuhn s.n. sh. 903.342-138* (lecto: L), *fide* Veldkamp (1994: 380).

Panicum pallide-fuscum Schumach., *Beskr. Guin. Pl.* 58 (1827); *Setaria pallide-fusca* (Schumach.) Stapf & C.E.Hubb., *Bull. Misc. Inform. Kew* 1930: 259 (1930) ("*pallidifusca*"); *S. glauca* var. *pallide-fusca* (Schumach.) Koyama, *J. Jap. Bot.* 37: 237 (1962); *S. pumila* subsp. *pallide-fusca* (Schumach.) B.K.Simon, *Austrobaileya* 2: 22 (1984). **Type:** Ghana, *s.dat.*, *P.Thonning 344* (holo: C).

***Notes*:** Veldkamp (1994) also placed *S. surgens* Stapf in synonymy with *S. parviflora*. However, the former does not have short knotty rhizomes as in *S. parviflora* and the latter has an upper glume that is greater than half the spikelet length, whereas in *S. surgens* the upper glume is ¾ the spikelet length.

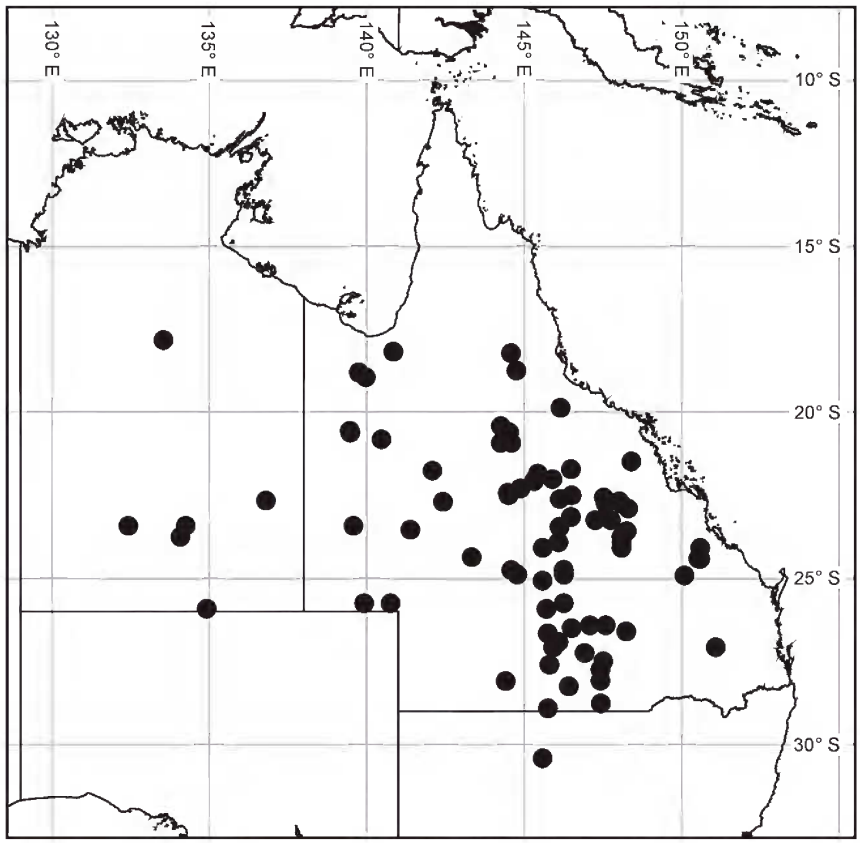
12. New combinations, a change of status and a lectotypification in *Urochloa* P.Beauv.

The genus *Urochloa* P.Beauv. was first recircumscribed 23 years ago on morphological evidence to accommodate all the Australian species of *Brachiaria* (Trin.) Griseb. except *B. eruciformis* (Webster 1987). This species was subsequently transferred to *Moorochloa* (Veldkamp 2004) for nomenclatural reasons. Since then other authors have transferred most other *Brachiaria* species to *Urochloa* for all regions of the world other than for all of the African species (Morrone & Zuloaga 1993; Veldkamp 1996; Ashalatha 1997; Torres Gonzales & Morton 2005) based on both morphological and molecular data.

In his treatment Webster (1987) established two subspecies of *Urochloa gilesii* (Benth.) Hughes, the type variety and subsp. *occidentalis* based on *Brachiaria occidentalis* C.A.Gardner & C.E.Hubb. These two taxa differ in overall spikelet size (3–4 mm long, 1.2–1.4 mm wide in subsp. *occidentalis* and 4–5 mm long, 1.4–1.8 mm wide in subsp. *gilesii*). I am of the opinion it is better to maintain species rank for these two taxa, necessitating a new combination.

Urochloa occidentalis (C.A.Gardner & C.E.Hubb.) B.K.Simon **comb. nov.**; *Brachiaria occidentalis* C.A.Gardner & C.E. Hubb., *Hooker's Icon. Pl.* 3363 (1938); *Urochloa gilesii* subsp. *occidentalis* (C.A.Gardner & C.E.Hubb.) R.D.Webster, *Austral. Paniceae* 238 (1987). **Type:** Western Australia. Minilya River, Wandagee Station, 29 August 1932, *C.A.Gardner 3227a* (lecto: K [photo BRI]; isolecto: BRI, K [photo BRI], PERTH [photo BRI]), *fide* Webster (1987: 238).

***Notes*:** Gardner & Hubbard (1938) indicated that *Urochloa occidentalis* (under *Brachiaria*) possessed hairy and glabrous spikelets and they decided to formally name the form with



Map 15. Distribution in Australia of *Urochloa gilesii* var. *gilesii*

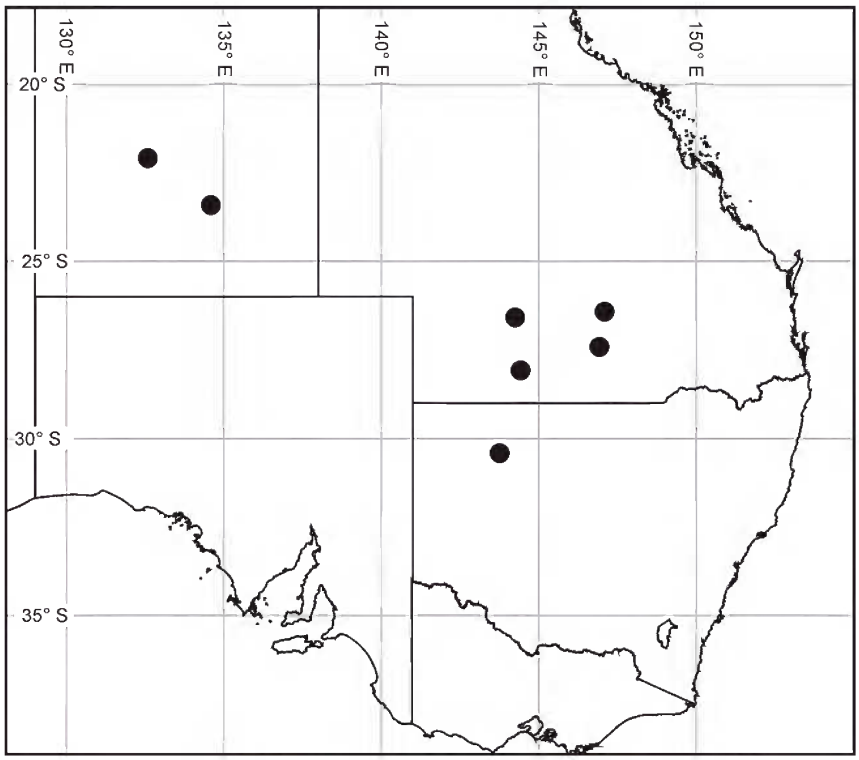
hairy spikelets as *Brachiaria occidentalis* var. *ciliata* C.A.Gardner & C.E.Hubb. A new combination of this variety is required under *Urochloa*. Both varieties are restricted to Western Australia (**Map 14**).

Urochloa occidentalis var. **ciliata** (C.A.Gardner & C.E.Hubb.) B.K.Simon **comb. nov.**; *Brachiaria occidentalis* var. *ciliata* C.A.Gardner & C.E.Hubb., *Hooker's Icon. Pl.* 3363: 3 (1938). **Type:** Western Australia. Turee Station, October 1933, *MacGuire s.n.* (lecto: PERTH00995703 [here chosen] [photo BRI]; isolecto: BRI, K [photo BRI]).

***Notes*:** Webster (1987) lectotypified the varietal name on the material at K of this variety; however, an examination of the two PERTH isolectotypes (PERTH00995703 and PERTH00995711) of MacGuire's has revealed that one of these specimens has hairy spikelets and the other glabrous spikelets, so that a new lectotypification is necessary.

Urochloa gilesii var. **nothochthona** (Domin) B.K.Simon **comb. et stat. nov.**; *Panicum notochthonum* Domin, *Repert. Spec. Nov. Regni Veg.* 10: 60 (1911); *Brachiaria notochthona* (Domin) Stapf in D.Prain (ed.), *Fl. Trop. Afr.* 9: 597 (1920); *Urochloa notochthona* (Domin) Hughes, *Bull. Misc. Inform. Kew* 1923: 319 (1923). **Type:** New South Wales. Darling River, *s.dat.*, *J.Dallachy* (holo: K [photo BRI]; iso: BRI).

Panicum heteroneuron Mez, *Repert. Spec. Nov. Regni Veg.* 17: 83 (1921). **Type:** New South Wales. Tongo Station, Wilcannia, *s.dat.*, *W.J.Hourigan s.n.* (holo: B; iso: BRI, NSW).



Map 16. Distribution in Australia of *Urochloa gilesii* var. *nothochthona*

***Notes*:** Webster (1987) placed *Urochloa notochthona* into synonymy with *U. gilesii* as the spikelets of these two species are similar in all respects, other than the spikelets of *U. notochthona* being glabrous and those of *U. gilesii* hairy. For the latter reason I feel recognition of the two taxa is best represented at varietal rank.

There is a difference in the distribution of *U. occidentalis* and *U. gilesii*, with the former (**Map 14**) being endemic to the Pilbara region of Western Australia, and the latter (**Maps 15** and **16**) from the arid and semi-arid regions of central and south-east Australia.

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